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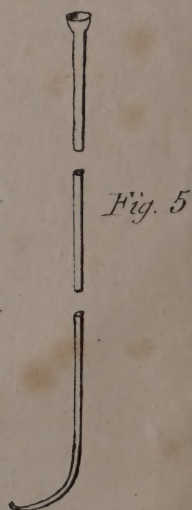
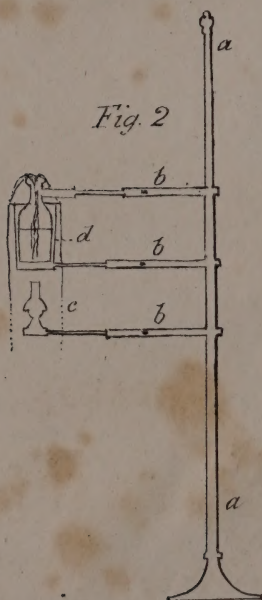
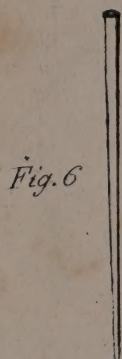
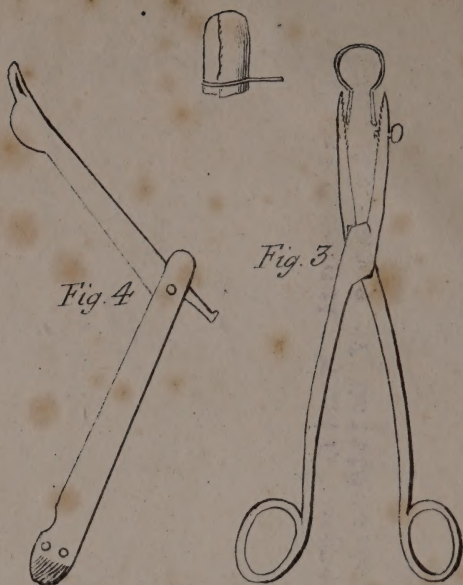
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A

PHYSIOLOGICAL ENQUIRY

RESPECTING THE ACTION OF

MOXA,

AND ITS UTILITY IN

INVETERATE CASES

OF

SCIATICA, LUMBAGO, PARAPLEGIA, EPILEPSY,

AND SOME OTHER

PAINFUL, PARALYTIC, AND SPASMODIC DISEASES

OF THE

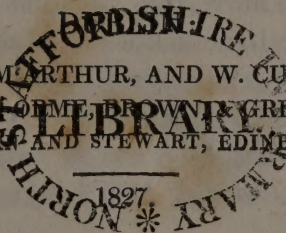
NERVES AND MUSCLES.

BY WILLIAM WALLACE, M. R. I. A.

&c. &c.

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LECTURER ON SEMEIOLOGY AND CLINICAL SURGERY;

HODGES AND MARTIN, AND W. CURRY, & CO.;
LONGMAN, REES, ORME, BROWN, & GREEN, LONDON;
M'LACHLAN AND STEWART, EDINBURGH.



PHYSIOLOGICAL ENQUIRY

RESPECTING THE ACTION OF

MOXA.

AND ITS EFFECTS IN

INFLAMMATORY CASES

"Fallax non raro Experientia, si Rationis ductu fuerit destituta : Quapropter,
nisi mutuam sibi lucem communicent, æquam erroris ansam præbent."

BAGLIVI OPERA, CAP. II. SEC. 5.



HODGES AND SONS, 21, NASSAU ST. N.Y.
LONGMAN, REES, GREEN, & CO., LONDON.
W. B. ALLEN, 10, N. 4TH ST. PHILADELPHIA.

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PREFACE.

WHEN, at the request of some professional friends, I first determined to communicate the results of my employment of Moxa, it was my intention to limit the publication to those general observations, which form the preliminary matter of the present work, and to the recital of a select number of cases. This, I hoped, would contribute sufficiently to the removal of the prejudices which exist in these countries against the use of Moxa, and assist in placing this valuable remedy in that high rank, which it so eminently deserves among the most important therapeutic agents we possess.

A little reflection, however, soon convinced me that such a mode of proceeding was ill-calculated to do justice to my subject. For, from numerous conversations, which I have intentionally held with my professional brethren, I feel certain, that one of the great barriers to the employment of Moxa, in Great Britain, arises from its mode of action being compared and confounded with that of other remedies

in general use. It appears, in fact, to be inferred from such views, that Moxa does not afford any peculiar means of combating disease; and, therefore, that there is not any good reason why it should be employed, when its effects might be procured by other remedies, which are not so likely to excite the fears or apprehensions of the patient.

Thus, it appeared absolutely necessary to the success of my endeavours to demonstrate, *in limine*, that the prevailing opinions, respecting the mode of action of Moxa, are completely erroneous; and to show that this agent affords a remedy which cannot be replaced by any other yet known. This demonstration I have attempted to furnish in the first and second sections of the work, in which I consider the immediate cause of functional disease, and the mode of action of Moxa. I have thereby been led to trace the general principles, which should regulate us in combating morbid action; and also to investigate the particular agency of Moxa, as a mean of fulfilling some of those numerous indications, which the varied forms of disease present.

The eagerness, which the novelty of a new remedy excites, frequently prompts us to a very unscientific application of it. For, on such occasions, we often pay little attention to the stage of disease to which its peculiar action may be suited, or to those numerous collateral indications, which must be fulfilled to secure its beneficial influence. That it

would be otherwise with the Moxa, I could not expect, if I contented myself merely with the general assertion, that it was suited, by the nature of its mode of action, to a particular class of morbid affections. To secure its judicious application I have, therefore, investigated, in the third and fifth sections, the exact stage of disease, in which it should be employed, and the various adjuvants which may be used along with it. Thus, the work has gradually, and I may add, necessarily assumed, in some measure, the aspect of a dissertation on the general treatment of one stage of an important class of diseases, and of a physiological investigation of the general action of Moxa on the vital textures.

In selecting cases to illustrate my views, I have been much influenced by a desire to furnish such as afforded proofs of the efficacy of Moxa, which I considered unequivocal, because other measures had been previously employed in vain in these cases, and because the treatment adopted by me, was conducted without the material co-operation of any other remedy. The reader will recollect this circumstance, for, as the cases have been selected from a vast number, he must not expect that, in the common course of practice, he will meet with a succession of patients, whose diseases will present indications so simple, or require such little modification in treatment. At the same time, as all the cases related happened

within the space of a very few weeks, he will conclude that, when the field for observation is extensive, such cases will be found of frequent occurrence.

It is likely that it shall be asked by some of my readers, why have I not spoken respecting the use of Moxa in many other diseases, for the cure or relief of which it is extolled on the Continent? If so, I beg leave to observe, that I have intentionally limited myself to those diseases in which I could speak of its influence with decision, from having had, in my own practice, the most ample opportunity of employing it, under almost every possible circumstance.

Nor can it be considered irrelevant to state, that I am entitled to speak with confidence respecting the diseases treated of in this publication, from having enjoyed a field for observing them, greater than commonly falls to the lot of hospital Surgeons. This has arisen from my connection, for eight years and upwards, with the Dublin Skin Infirmary, and from some share of private practice in these diseases, resulting from that connection. For, although the Infirmary was founded for the treatment of rheumatic and cutaneous diseases alone, it has become a point of attraction not only to those patients who labour under the diseases for which it was instituted, but for all those affected by disorders which appear, in the eyes of the public, to be allied to them, or

which may be benefited by the highly valuable and efficacious apparatus which has been constructed at the Infirmary.

It has been warmly discussed, whether the cause of medical science be advanced or retarded by establishments for the treatment of particular diseases: but, although much has been ingeniously said against such institutions, upon the grounds of their tendency to lead the mind to view certain diseases in too abstract a manner, while all maladies should be considered as the members of one family, each class mutually illustrating the other—I am quite convinced, that they must inevitably lead to improvements in both science and practice, if they be held by individuals connected with general hospitals, and who are thus prevented from forming those narrow and hypothetical views, which certainly might otherwise arise. For, it is evident, that if a number of diseases of a similar kind are grouped together, an opportunity is afforded of comparing their different forms, which cannot be had under other circumstances; and, from this comparison, great practical advantage, in the way of diagnosis and treatment, must necessarily result. Moreover, when an institution is limited in its object, the arrangements for the peculiar and accurate treatment of those diseases, which come within its scope, may be made much more complete than in a general hospital.

In consequence of the great variety of very

different cases, in which I have had occasion to employ Moxa, I have been led to make several modifications in its mode of application. Of these I have given some account in the fourth section. I have also taken an opportunity of describing a mode of cupping, which is very superior to that in general use in these countries. Lastly, I have given a drawing of such instruments referred to in the following pages, as have not been already delineated in my other publications. Among these, the reader will find a sketch of the scarificator used by Baron Larrey in the operation of cupping. This last drawing was made from an instrument, with which I was presented by the Baron, on the occasion of his late visit to Dublin.

INTRODUCTORY OBSERVATIONS.

“ Non vereor, nequid timidè, nequid stultè facias, si ea defendes,
Quæ ipse recta esse senties.”

CIC. EP. ad FAM. LIB. 2, EP. 7.

OF the numerous and important peculiarities which distinguish French from British Surgery, there are none more remarkable than those afforded by the remedy which holds a prominent rank in the following pages. —That striking differences should have existed in the surgical practice of Great Britain and France, so long as scientific intercourse between these countries was obstructed by warfare, might be expected, however deplored, as one of the inevitable misfortunes of that state; but that these differences should continue for a number of years, after every obstruction to scientific intercourse had ceased, will not, in the eyes of the philanthropist, exalt the professional character in either country; and it is impossible to avoid concluding that, either at *home* or *abroad*, there must exist a culpable neglect of comparing national peculiarities, and of deriving from that comparison legitimate conclusions for the regulation and improvement of practice; or, the existence of a national prejudice must be admitted, all-powerful in opposing whatever may be of foreign growth.

There are but few who will dispute that human nature is much the same at all times, and in every country; and, although I should be sorry to suppose, as it has been asserted, that "the national pride or prejudice of the English, is greater than that of any other civilized nation," I would be affording in myself a proof of those failings, if I were to assert, that we are not influenced by them as much as our neighbours. It is, therefore, most rational to suppose, that, when great differences exist in the surgical practice of Great Britain and France, truth may lie between the extremes.

Such were the reflections which induced me, some years ago, to investigate the powers of a remedy which had obtained the highest character on the Continent, without awakening attention in these countries; and having ascertained, by careful and extensive observation, both in hospital and private practice, that it afforded a valuable addition to our means of treating Rheumatic and Cutaneous diseases, I solicited the attention of my professional brethren to the subject; and have now the satisfaction to reflect, that my experience has been confirmed and testified by numerous communications from practitioners of the first respectability in different parts of the United Kingdom.* Motives, precisely similar, prompted me to the employment of the remedy which forms the subject of the following pages; and having found it deserving of the high character which it enjoys on the Continent, I have felt that I would be deficient in zeal for the advancement of my profession, if I did not exert my humble efforts to awaken attention to the subject, and contribute my mite to the

* See "Observations on Sulphureous Fumigations, as a Powerful Remedy in Rheumatism and Diseases of the Skin." by W. WALLACE, M. R. I. A. &c. Dublin.—1820.

removal of any prejudices which may exist against its employment.

It is impossible, in my opinion, for any individual in search of truth, and anxious to extend his professional resources, to peruse the writings of Baron Larrey, without forming the highest opinion of the efficacy of Moxa in the treatment of some of the most obstinate diseases to which we are subject.* It must be obvious, that a man who has held, for a long series of years, the highest and most responsible situation in his profession, would be incapable of any kind of wilful misrepresentation. It is equally evident that his almost unparalleled experience, is a sufficient guarantee that he has not himself been deceived in the opinion which he has formed of its efficacy. Can the strong terms in which he has extolled this remedy be attributed to any other cause than a sincere desire to benefit mankind? No love of fame could induce such a man to deceive his professional brethren, for he enjoys already all that fame can give; no desire of emolument could prompt him to such base conduct, for his peculiar situation removes him from all possible suspicion of this kind. Nor should it be forgotten, in estimating the degree of importance to be attached to the writings of Larrey on the subject of Moxa, that it is not a remedy which has originated with him; for he candidly informs us, that during his campaigns in *North America*, *Egypt*, and *Syria*, having had an opportunity of confirming the observations of authors and travellers, respecting the great advantages which the people of those countries derive

* The MOXA may be defined, any substance whose gradual combustion is allowed to take place on the skin, for the cure or relief of disease.—A word probably of ARABIC origin, from *Muhk*, being scorched—or of PORTUGUESE extraction from *Motzchia*, match.

from the use of Moxa, in several intractable morbid affections, he availed himself of every occasion which occurred in his practice of making trial of it; and the happy and extraordinary success, which he generally obtained from its application, in a great number of desperate cases, induced him to publish the result of his practice; “*trop heureux,*” says he, in that zealous and benevolent spirit which has uniformly marked his professional career, “*trop heureux si cette nouvelle production peut contribuer aux progrès de la chirurgie, et me donner un titre de plus à l’estime publique!*”

Nor is the value of this remedy supported by the testimony of Larrey alone. The scarcely less illustrious Baron Percy, Inspector General of the medical staff of the French armies;—Dupuytren, whose professional fame has long since extended over Europe;—his venerable colleague, Pelletan, chief surgeon of L’Hotel Dieu;—the well-known, and deservedly eminent, Riche-rand;—Roux, the experienced surgeon of La Charité;—in short, every practitioner of extensive experience in France, every hospital surgeon, every professor of the School of Medicine of Paris, with one voice style it “*le remède souverain!*” “*le remède héroïque!*”

Are we to suppose that these illustrious men are all deceived, or that they are all wilful impostors on public credulity? Surely no rational mind can come to such a conclusion! Why, therefore, is not the Moxa in general employment among us? I am afraid this cannot be attributed to any other cause, than to some dislike of deviating from accustomed routine, or to some deep-rooted prejudice,—or to what is even worse, a deficiency of that spirit which should be always alive in the bosom of every man of science, of every profession, to avail himself of every light in the particular pursuit to

which he has devoted his attention—a spirit which ought to be peculiarly alive in the medical practitioner, whose immediate profession is so intimately connected with the alleviation of the sufferings of mankind. He ought to be most anxious to catch at any means which will increase his powers of removing or alleviating disease; particularly if they offer a fair prospect of success in the treatment of those maladies, which are little under the controul of ordinary measures.

Will any one reply, as I have heard asserted in conversation, that the Moxa has been tried in these countries, and that it has not fulfilled the expectations raised by the Continental practitioners? If so, the following is my answer, that as far as I have heard of its employment in these countries, it has been used either upon no fixed principle at all, or upon an erroneous one: cases have been selected for its application, without any scientific ground of choice; and in no one instance have I heard of its proper employment having been persevered in, so as to afford any rational hope of benefit. In these assertions, I am fully supported by the testimony of Dr. Dunglison, formerly of London, and now a Professor in the School of Medicine of Virginia. The following are his words, in a learned Introduction to his Translation of a Memoir on Moxa, by Baron Larrey, p. lxiii.—“The observations of British practitioners can have no weight, however, upon this subject; for the Moxa, most assuredly, *has never had even the shadow of a fair trial in this country*: some few cases have occurred where it has been employed, but they have been so rare, and so imperfectly followed up, that no negative or affirmative respecting its good effects can be deduced from them.”

But, while I have found some ready to assert that the

utility of Moxa was not equal to the success which might have been expected, I have found none who were hardy enough to affirm, that it was an inefficient remedy, or that it was never useful. And are we, because we cannot obtain from it, on all occasions, those remarkable cures, which appear to have resulted from the employment of it by those who have advocated its cause, are we, I say, on such an account, to exclude it entirely from practice?—Such conduct might be compared to that of a sculptor of ordinary talent, who would discard the tools used by a Canova or a Therwolsden, if he was not able, like their illustrious owners, to make his object start into life under their magic influence.—Or take the matter in another point of view, and for argument's sake let it be admitted, that the advocates of this remedy have been too partial in their recommendations, are we to go into an opposite extreme, and because we cannot obtain every advantage from it, obtain none? May not such conduct be compared to that of those sceptics who have abandoned the employment of vaccination, merely in consequence of its not fulfilling every thing which Dr. Jenner promised on its first introduction. Legitimate scepticism is our natural protector against the evils of imposition and credulity, but, like all other faculties of the human mind, it is made the subject of daily abuse. There are many who cherish this spirit, from a false idea that it denotes the exercise of a superior intellect; to such let me observe, in the words of that distinguished philosopher Dugald Stewart, that “Unlimited scepticism is as much the child of imbecility as implicit credulity.”

There is, certainly, no greater barrier to the advancement of medical science, than the exaggerated recommendation or indiscriminate application of remedies.—Our most valuable resources require the most judgment

in their employment; and the very circumstance, that a remedy is of great and general power, becomes, extraordinary as it may appear, often the cause of its falling into total disuse. For when a remedy possesses remarkable activity, the ignorant and thoughtless practitioner often adopts it as his sheet anchor, and not having judgment or caution sufficient to distinguish the cases to which it is suited, from his indiscriminate employment of it there necessarily results frequent failure or accident; for in general, exactly in the same proportion as a remedy is efficient in removing disease, so is it deleterious to the system, if improperly applied. And, it is scarcely necessary to say, that if from such misapplications any serious consequence should arise in the practice of an individual, whom fashion has made high in rank, it may become the cause of its total removal from general practice or employment. "*Marcus dixit?*" and the crowd exclaims "*ita est*"—

"Did Marcus say 'twas fact?—then fact it is,
No proof so valid as a word of his."

Public clamour thus once raised against it, custom comes to the aid of prejudice, and affords if possible, a more powerful barrier to truth than even the undue influence of authority, for, as Dr. Paley observes, "The mass of mankind act more from habit than reflection." Thus, there exists a fashion in medicine, as in the other affairs of life, regulated by the caprice and supported by the authority of a few leading practitioners, which has been frequently the occasion of dismissing from practice valuable medicines, and of substituting others less certain in their effects, and more questionable in their nature.

When a remedy has been thus banished from gene-

ral employment, it falls into total disuse, and remains in oblivion, until some other circumstances again call it into action. Unfortunately the history of the *Materia Medica* affords but too many proofs of the truth of this assertion. As Dr. Paris observes, in his *Pharmacologia*, the warm bath, which for so many ages was esteemed the greatest luxury in health, and the most efficacious remedy in disease, fell into total disrepute in the reign of Augustus, for no other reason than because Antonius Musa had cured the Emperor of a dangerous malady by the use of the cold bath. The most frigid water, which could be procured, was in consequence recommended on every occasion. This practice, however, was doomed to but an ephemeral popularity; for although it had restored the Emperor to health, it shortly after killed his nephew and son-in-law Marcellus; an event which at once deprived the remedy of its credit, and the physician of his popularity.

The Peruvian Bark having unfortunately failed, in the autumn of 1652, to cure Leopold, Archduke of Austria, of a Quartan Intermittent, the disappointment kindled the resentment of the Prince's physician Chifletius, who published a violent philippic against its virtues, and this so fomented the prejudices against its employment, that this powerful remedy had in consequence nearly fallen into total disrepute. Nor has Antimony (one of the most powerful remedies, and without which an efficient practice of medicine could scarcely exist,) escaped the vicissitudes of public and professional favour. In the celebrated contest, which took place between the Galenical and Chemical sects, and which has given such a controversial tone to the writers of the 15th and 16th centuries, the Galenists, (who occupied the schools, and who consequently had

the ear of Government,) conceiving that the revolt from orthodox authority was, in a great degree, attributable to the introduction of antimonial remedies, careless of the advantage which these remedies afforded in the treatment of disease, and ready to forfeit the welfare of their species for the support of their cause,—denounced the preparations of this metal with all the virulence of party spirit; and the more effectually to support their ground, and to oppose and persecute their adversaries, they solicited and obtained the aid of secular power. The Parliament of France accordingly proscribed the use of Antimony, by an edict in 1566; and Besnier was expelled the Faculty of Medicine of Paris, in 1609, for having administered it to a patient!! After a time, from some new influence, Antimonial Wine was, by public authority, received into the number of purgatives; and in 1650 a new decree rescinded that of 1566, restoring all the preparations of Antimony to public favour and general reputation. And, extraordinary as it may appear, the very same Government, which had with such great virulence, and so little justice, persecuted every practitioner, who had shown any predilection for the use of this mineral, actually purchased, in the year 1720, the secret of an antimonial preparation, called *Panacea Glauberiana*, from a Surgeon of the name of La Legerie, who had acquired the secret from a pupil of Glauber.*

But we need not look beyond the present time for a proof of those vicissitudes which our most valuable remedies undergo.—Have we not a remarkable example of this in the existing state of practice respecting syphilitic diseases? By the highly valuable investi-

* See *Pharmacologia*, by J. A. Paris, M. D. &c.

gations of British Army Surgeons, the possibility of curing these maladies, without mercury, was fully ascertained. The discovery naturally led, as it should have done, reflecting practitioners to employ a much smaller quantity of this mineral, and from this change in practice considerable advantages have resulted to mankind; but these advantages have been deeply chequered, in consequence of the line of practice adopted by those who conclude that mercurials must rarely, if ever, be employed. Such a conclusion appears not only logically incorrect, but really absurd, when it is considered that, if we possess any specific, mercury is a specific for syphilis, when properly administered; and although this disease may often, if not always, be cured without mercury, its cure is, with few exceptions, far more rapid, more certain, and more satisfactory, under the mild and well-directed management of this mineral. Thus it has, in every age, uniformly happened that we are eternally vacillating between extremes. Do those who cry out against the mercurial treatment of syphilitic diseases, upon the principle, that they are capable of being cured without mercury, reflect that the same reasoning would apply to the exclusion of three-fourths of our remedies, in the greater proportion of the diseases to which the human race is subject? And would any one be so weak as to argue, that because these diseases can be cured without a particular system of treatment, we should refrain from that treatment, (when it can be employed without risk or danger,) and thus consign our patients to weeks, yea months, of a valetudinary state of health, when his complaints might have been removed in as many days? Let common sense and humanity, therefore, combine, and drive this "*Médecine expectante*," or, as it has been properly styled, "*Meditation on death*,"

to its deserved oblivion; and while we avoid the excessive salivations which occurred in the practice of our forefathers, let us not prolong the miseries of our patients by adopting an opposite extreme; otherwise our profession shall soon deserve the definition which has been given of it by a foreign writer—"Physic is the art of amusing the patient, while nature cures the disease."

Such are a few examples of the remarkable vicissitudes which our most valuable remedies have undergone. The history of Colchicum, Cubebs, Opium, Henbane, Tobacco, Iron, &c. &c. would furnish many more. Occurrences like these constitute the real opprobria of medical practitioners. They afford degrading materials for a history of the human mind, and have deservedly brought on *us*, but undeservedly on *our profession*, the keen shafts of ridicule.

But, to return to my subject, from which I have been insensibly drawn, I could adduce many facts in proof of the sad misapplication of the Moxa; let the following serve as an example. A poor woman, who some short time before had met with a fall, applied to a surgeon to relieve her arm, which hung powerless at her side. The surgeon prescribed the Moxa.—It was applied.—I shall say nothing of the manner.—No relief from the application.—It was repeated.—Still no relief.—This treatment was pursued until the Moxa had been applied four times. What will the reader suppose now occurred? Why, the Moxa was of course denounced as a useless remedy in paralysis of the shoulder from injury; and, the patient having fallen into other hands, it was ascertained that the cause of this want of power, which could not be removed by the application of the Moxa, was owing to a fracture of the humerus near its neck!!! Such oc-

currences can scarcely be attributed to ignorance, they must arise from want of attention ; if, therefore, sufficient attention is not given to distinguish such obvious cases, and if the remedy is consequently misapplied in them, how much more likely will it be for such misapplications to take place in cases, which require all the discriminating judgment of the most accurate and most skilful practitioner.

Another great source of error arises from the incorrect views which prevail respecting the action of Moxa. I have uniformly heard its effects compared to those of a blister or issue. Nothing can be more unfounded than such an opinion. Of this the reader will be convinced hereafter. In the mean time, it may be observed, that the good effects of a blister are attributable, partly to the local inflammation or counter-irritation excited by it, and partly to the serous or purulent discharge which results : while the action of an issue depends on the purulent drain which it causes. Whereas, the Moxa, when properly applied, and in appropriate cases, may be said to produce neither inflammation nor discharge. In fact, if it should excite much inflammation, it must be quite certain that the Moxa is either not suited to the case, or that it has been incorrectly applied ; and, on many occasions, no discharge whatever results. But, even when a discharge does take place, the good effects of the Moxa have occurred, long before the discharge has been established ; and, although the discharge may be useful in some particular cases, its beneficial effects depend upon a principle altogether different from that which explains the utility of Moxa. This remedy, therefore, does not act either as a blister or issue ; and it will be proved in the sequel, that the practitioner, who shall regulate his conduct as if he expected such effects, must inevitably fail, in obtaining the beneficial

influence of Moxa, in nine cases out of ten in which he may employ it.

Some, from what motives I cannot conceive, have attempted to excite a popular prejudice against the application of Moxa, by representing that it is a remedy of a most painful nature. Others have wished to cast a degree of ridicule and barbarism on the practice, by comparing it with the application of the actual Cautery, "which," say they, "is confined to English farriery." Do such objections deserve a serious refutation? To compare Moxa with the actual Cautery, is indeed "*parvis componere magna*." It is true that caloric is the active agent in both applications; but, do we not amputate the female breast, incise the urinary bladder for the extraction of a stone, and remove an insignificant wen with the same instrument; and will any one, because the same agent is used on these very different occasions, compare the danger, severity or delicacy of the former operations with those of the latter. Just as well might the application of the Moxa be compared with that of the actual Cautery.

Did the pain, which attends the application of Moxa, afford grounds for its exclusion from practice, we should also exclude the majority of surgical remedies. This is, unfortunately, one of the objections to the employment of those resources which our art affords. In estimating the degree of pain which attends the application of any remedy, we should compare it with the evils which the remedy is meant to relieve. If the pain, which is excited by the Moxa, be considered in this point of view, fewer objections can be offered to it than to many other remedies in daily use; for, while I know of none whose efficacy can be compared to it in many diseases, there are several which are much more painful. I have had innumerable opportunities of ascertaining the opinions of

patients, respecting the comparative pain produced by Moxa, caustic issues, and blisters; and, *I have never met with a single instance, in which the Moxa when properly applied, has not been considered the mildest remedy by many degrees.* I admit that there is nothing more natural than to suppose its application must be attended by very considerable pain. This is, however, far from being the case. Instances have occurred to me of the youngest patients urging its repetition, so trifling was the uneasiness which it produced, compared with the distress which it relieved.

Sir W. Temple applied the Moxa in his own person, and what is the account which he has given of it? In the following words he describes his sensations during its application: “For the pain of the burning itself, the first time it is sharp, so that a man may be allowed to complain: I resolved I would not, but that I would count to a certain number, as the best measure how long it lasted: I told *six score and four as fast as I could*, and when the fire of the Moxa was out, *all pain of burning was over.* The second time was not near so sharp as the first, and the third a great deal less than the second. The wound was not raw as I expected, but looked only scorched and black; and *I had rather endure the whole trouble of the operation than half a quarter of an hour’s pain, in the degree I felt it the first whole night.*”* This fully corresponds with the following remark made by Kämpfer in his History of Japan. “The pain is not very considerable, and falls far short of that which is occasioned by other caustics or actual cauteries. I have seen many times the very boys suffer themselves to be burnt in several parts of their

* Letters written by SIR WILLIAM TEMPLE, Bart. and other Ministers of State, &c. Published by JONATHAN SWIFT, Domestic Chaplain to his Excellency the Earl of BERKELY, &c. page 135. vol. 1. Lond. 1720.

body, without shewing the least sense of pain.”* To these testimonies, in support of my own observation, many others might be adduced ; but I limit myself to the above, because they are the testimonies of men, who did not belong to our profession, and because they must consequently be received as entirely impartial.

Having, I trust, prepared the reader for an unprejudiced investigation of the facts and conclusions, which are to follow, I shall proceed to my immediate object ; and as it is quite clear that we cannot make a scientific application of any remedy, without an accurate acquaintance with the nature or immediate cause of those morbid states, which it is meant to cure or relieve ; some reflections on this subject will, therefore, with propriety first occupy our attention.

* *History of Japan*. vol. ii. sec. 4. page 39.

SECTION I.

OF THE IMMEDIATE CAUSE OF FUNCTIONAL DISEASE.

“ We ought carefully to distinguish between a true physical cause, and those which may be termed metaphysical ; a knowledge of the former constitutes real science, and conducts to useful practice ; to rest satisfied with the latter, is to be contented with empty figments, and barren speculation.”

PRINCIPLES OF SURGERY, by J. PEARSON, F.R.S. &c.—p. 21.

WE frequently read in medical writings, and hear in professional conversation, the term *functional* disease, in contradistinction to the term *organic* disease. A little consideration will prove the incorrectness of such language, and lead to the inevitable conclusion that all diseases are both *functional* and *organic* : or in other words, that there is no functional disease without organic derangement ; nor any organic disease without functional disorder. If the mode of expression alluded to, did not lead to error in reasoning on the treatment of the diseases, which form the subject of this publication, I should not stop to notice it ; but, conceiving as I do that it has a powerful, though, perhaps, insensible influence on our mind in actual practice, I feel it necessary to say a few words on the subject.

Every texture or organ, which enters into the formation of a living body, performs at least two functions : one of

these functions relates to the tissue or organ, considered in itself as a particular entity; the other to the part which it acts in the general assemblage of functions, which constitutes the individual. Take any organ for an example: thus, by the function of nutrition, that peculiar texture of a muscle is preserved, by which it is enabled to contract—or, in other words, perform the function, whereby it contributes its share towards the preservation of the body; by the function of nutrition, the liver is preserved in a state suited to the performance of its general function, the separation of bile from the blood; from the same function of nutrition are derived those physical qualities, upon which the general functions of bone depend, or the functions by which it is enabled to support and protect the softer organs, and serve the purposes of levers of motion. The first kind of function, or the function of nutrition, is strikingly analogous in its immediate object in all organic textures: exhibiting in each only slight peculiarities. Whereas the second kind of function is very dissimilar in different organs: thus, what resemblance can we observe between the secretion of bile, the contraction of a muscle, and the perception of a nerve. That function of a part, by which it forms and preserves its own structure, may be called the *primary* function of the part, and the function, which it performs for the preservation of the general system, its *secondary* function.*

The kidney cannot, in the natural state of the body, secrete bile, nor the liver urine; bone is unable to exhibit the phenomena of muscular contraction, nor can muscle perform the function of bone: to these might be added numberless instances, in proof of the connexion

* It is obvious that I confine the term *nutrition* to the last act in the series of functions, by which organic bodies receive, assimilate, appropriate, and afterwards discharge from the system, those substances which serve, for a time, to form and support the organic structure—the preliminary acts to the act of nutrition being digestion, absorption, sanguification, circulation, &c. &c.

which exists between the secondary functions of parts and their structure, which is the result of their primary function. This connexion is, in fact, under every circumstance, so evident, that we are necessarily led to the conclusion, that structure and function are inseparably connected, and that the latter is related to the former, as an effect is to its cause.

If structure be the cause of function, it follows that no modification can take place in function that is not preceded by a corresponding alteration in structure; nor can any modification of structure occur, without necessarily inducing a greater or lesser modification of function.

If the foregoing reasoning be correct, (and there does not appear any evident source of error,) it necessarily follows, that all altered functions, and consequently all functional disease, must be preceded by a derangement in structure. Nor does the argument receive any opposition from the reflection that these alterations in structure are not *on all occasions* cognizable by the senses: For our senses are not always able to detect peculiarities of organization, although we may logically conclude that they exist. Thus, for example, we are often unable to point out any differences in the structure of the ova of oviparous animals, although, from the products which result from these germs of animal existence, we are forced to conclude that there are essential differences, but we have no acquaintance with these differences, except by their effects. We must, therefore, be content on many occasions to reason from analogy; and look forward to the period, if that should ever arrive, when we shall possess more accurate means of examining diseased textures.

Thus it appears, as function results from structure, all functional disease must arise from altered structure; and as all structure results from the function of nutrition, there can be no alteration in structure, without a cor-

responding alteration in this function. Hence, all diseases essentially consist in a morbid state of the function of nutrition, or of the primary function of organic parts; at least we must arrive at this conclusion in our present imperfect stage of knowledge.

On examining this subject more minutely, it may be asked, since all functions depend on structure, what is the organization upon which the primary function, or the function of nutrition depends? To this no ultimate satisfactory answer can be given. Here our researches must end. Our Creator has said, so far shall you come, and no farther. We see every where, in our investigations of nature, a finite barrier. Thus, if we examine the structure of an artery, we find it to be composed of three membranes. If the structure of these membranes be examined, we discover in them the existence of certain elements of organization, such as minute vessels, minute nerves, &c. and we may say that the membranes of the artery result from the action of these. Further than this we cannot go, although we must feel convinced, that these *vasa vasorum*, or *nervi vasorum*, must be themselves composed of some more minute subdivision of organic parts, or, else, how are they formed?

In thus assigning a structural, and consequently, a vascular origin to all diseases, it is necessary to point out the difference which exists between this view of the matter and that which has been taken of the same subject by one of the brightest ornaments of our profession: a man in whom were united the rare qualities of profound and accurate observation, with industry which could not be surpassed—and who, at the same time, enjoyed a field for investigation seldom equalled: is it necessary to say, that the individual to whom I allude is the late Dr. Parry of Bath?

The diseases which form the subject of this publication, are referred by Dr. Parry, in conjunction with the ma-

jority of diseases to which the human race is subject, to an excessive determination of blood to the organs which are the seat of the deranged functions. But it must have been known to this highly gifted author, that many of those diseases never exhibit any sign of preternatural accumulation of blood, either during life or on dissection; and that, in fact, an opposite state, or state of diminished vascularity, with either a shrinking or induration of parts, will be often found after death.

But let it be supposed, for argument's sake, that, in each, or all, of the diseases in question, there is an accumulation of blood, with or without increased momentum, is this accumulation of blood to be considered the cause or the effect of disease? If we consider it the cause, are we not granting to the blood a *primitive* activity in the system, to which we cannot consider it entitled. In fact, although the influence of both the quantity and quality of this fluid in the organs, is of the first importance in giving a character to the disease, and in affording grounds for certain modifications of treatment, we are to bear in recollection that its increased quantity must be considered as an effect, and not a cause; for it is evident that blood could not accumulate in a particular organ, without previous disease of the vital powers of the solids of that organ.

Observe, therefore, that, although it may be admitted that a given disease always exhibits a preternatural accumulation of blood in its seat, the mode of treatment which will be adopted by the pathologist, who attributes the accumulation to the state of the vital properties of the solids, will be widely different from that of the practitioner, who merely looks to the quantity of the fluids: the prime object of the former will be the restoration of the vital powers of the vessels to a natural state, always mindful of the influence which the fluids may have on

these vital powers ; while the latter will consider that, if he can, by any means, diminish the quantity of blood in the part, he must of necessity remove the disease. The futility of such principles of treatment will not, perhaps, be readily conceived by a young practitioner ; who, from the nature of the doctrines, which now prevail in the schools, considers the lancet and the leech as the grand remedies for every disease, accompanied by vascular congestion. His views will, however, *if he has judgment*, be soon corrected ; and he will find, on many occasions, that as long as he limits his attention to the abstraction of blood, at the expense of neglecting the state of the solids, he will daily observe diseases, evidently accompanied by an increased quantity of blood in their seat, proceed from bad to worse, attracting to their foci, as long as life continues, the contents of the vascular system. That these views are not incorrect, and that they are founded on experience, I could easily establish by cases which have occurred to my own observation, and by the experience of others of accurate reasoning and extensive research.

There are three authors who have made some remarks connected with this subject, and whose remarks have just occurred to my recollection. Mr. Abernethy observes, p. 56, of his *Surgical Works*, Vol. I. "I would ask too, practically, does blood-letting cure disorders in which there is a fulness of the vessels of the head ? It must be granted, that in many instances it temporarily alleviates them, but in others it fails to relieve and even aggravates them." Dr. Prichard in his work on *Diseases of the Nervous System*, observes at p. 72 :—"I have sometimes seen repeated venesections ordered for patients labouring under attacks of paralysis, which had evidently proceeded from determination of blood to the head ; when, after every successive abstraction of blood, the disease seemed ra-

ther aggravated than relieved : and in cases which appeared to be precisely similar, I have witnessed the most decided benefit to accrue from discontinuing the practice of depletion, and adopting a gently stimulating plan of treatment : and I can make a similar assertion respecting several other disorders of the nervous system." The following remark taken from Mr. Swan's little Treatise on the Nervous System, is quite confirmatory of the observations of Mr. Abernethy and Dr. Prichard. At page 45, Mr. Swan remarks, "When a person has become subject to dizziness," (a complaint which I believe to be uniformly attended by an accumulation of blood in the brain), "though he may, in the first instance, have been relieved by bleeding, yet should the complaint soon return, and especially if the body is much debilitated, a farther loss of blood will not only not relieve it, but will, on the contrary, increase it." He recommends for its removal, under such circumstances, bark and generous diet, a recommendation which will be found to correspond with the views of disease which I have taken in this publication.

The reader will not of course form the opinion that the remarks, which I have just made respecting the practical inference to which the doctrine of Parry would appear to lead, are meant to apply to the therapeutics of that excellent pathologist ;* for it cannot be doubted, that if he

* I have called it the DOCTRINE of PARRY, although traces of similar opinions may be found in the writings of several Physicians. Dr. T. HOFFMAN, was reproached with making the LOCAL DETERMINATION of BLOOD the cause of FEVER, of INFLAMMATION, of SPASMODIC, and of most other diseases. Yet Dr. PARRY is fully entitled to the honor, for to use the language of Dr. PRING in his PATHOLOGY, p. 105, "It is indebted for its improvement, perhaps for all the perfection of which it is capable, to the late Dr. PARRY, whose works on this subject are written in a spirit of true philosophical research, which has been equalled by few of his cotemporaries, and has rarely, in medicine, at any period, been surpassed."

had been spared to complete that luminous view, which he has taken of disease, he would have so explained his doctrines, as to have made them the foundation of a correct system of treatment. I, therefore, have merely alluded to the impression, which I think they must make on the generality of readers in their present state; and to the impression which they appear to have already made on many practitioners of superficial views, leading them to false analogies, and to consider that, in the employment of the lancet and other evacuations, the whole practice of medicine consists.

A full and scientific examination of the various causes of organic disease, or of disease of nutrition, would form an enquiry at once of the first importance, and of the most difficult kind. As yet, our knowledge on this subject is extremely imperfect. On many occasions we are in total ignorance of the cause of disease, and we cloak our ignorance by denominating such diseases spontaneous. Even on those occasions, when the cause is evident, we can seldom afford any satisfactory explanation of its mode of action. We know that some causes act on the part which becomes diseased, in an immediate and direct manner; we also know that, on other occasions, the causes are applied to parts very remote from the seat in which diseased action begins; and it is remarkable, that it very often happens, on these latter occasions, that no perceptible effect arises in the part to which the cause has been directly applied.

Among those causes which excite disease in the part to which they are applied, we place mechanical and chemical agents; and of those which act by their influence on parts remote from the seat of actual disease, we may adduce many substances, which, when introduced into the stomach, cause organic diseases of the skin, or in other

words, cutaneous inflammations. Let the reader bear in mind this evident proof that certain states of the stomach can cause remote disease, and he will have an apt illustration of the well-known influence of derangement of the digestive and other organs, in causing structural disorder.

Therefore, while the views which I have adopted admit the importance of disease of the digestive organs, or of any other important organs, in causing or keeping up organic disease in remote parts, it must be clear, from what I have said, that I consider the views of those practitioners, who do not look beyond such causes, as too partial. Although the removal of these causes forms an important link in the chain of indications, it is evident that the attention of the practitioner must extend still further, for there is nothing more true than that disease, once excited, will often proceed after its cause has been removed. If this was not the case, the disorders of the digestive organs, &c. would not require any other treatment than the removal of their cause; and proceeding a little further, we would arrive at the conclusion, that the removal of cause is our only indication in the treatment of disease: an important indication, certainly, and one which must always be fulfilled, otherwise, let the disease be ever so completely removed, if it be possible to do so while the cause remains, it must, as a matter of course, quickly return; unless the diseased action has been of such a kind as renders the system insensible to a second impression of the cause, as is the case with some morbid poisons.

Did the limits of this publication permit, or were it at all necessary, the foregoing doctrines respecting the cause of those diseases commonly denominated functional, could be made to receive the most ample illustration and support from a particular examination of the origin, progress,

and termination of the painful, convulsive, and paralytic affections under consideration. It could, in fact, be easily shewn, that a disorder of structure, or of the function of nutrition, of those organs or textures, which form the seat of these diseases, afforded a most ready explanation of all their symptoms; that a similarity of origin or cause could alone account for innumerable circumstances connected with their history, such as their mutual succession, or frequent conversion into each other; their simultaneous occurrence in the same individual, or in different individuals of the same family; the similarity of appearances in the organs or textures affected, as exhibited on dissection; the similarity in the processes of natural cure, when left to the unrestrained exertions of the system; and the similarity of the general principles of artificial cure: for, it would appear, that although the different diseases required sometimes different modes of treatment, such differences would not be found to be greater than those required by cases, apparently the same, but under different circumstances.

Holding in view the conclusion, that all diseases are essentially vascular or structural, and that the grand principle of their treatment consists in the restoration of the vascular solids, which are the seat of disease, to a state of healthy action, together with the removal of their cause, I shall now investigate the mode of operation of Moxa, for the purpose of determining the state and stage of disease to which it is suited, the principles which should regulate us in its employment, and the source from whence its powerful influence is derived.

SECTION II.

OF THE MODE OF ACTION OF MOXA.

“Medicos tandem tædet et pudet, diutius garrere de Remediis, Specificis, et Alexipharmicis, et cæteris, nisi eorum naturam et modum quo prosint, quodammodo ostendere et explanare possint.”

CONSPECT. MED. THEOR.

ALTHOUGH the employment of Moxa may be traced long prior to the existence of medicine as a science, it would be useless to investigate the principles, if any existed, upon which this remedial agent was employed, at times, or in countries, in which the light of modern physiology had not shed its lustre. Indeed, even in the writings of those eminent Surgeons of the present day, to whom the powerful agency of this remedy is so well known, and who have presented us with a mass of facts, which incontestably prove its efficacy, there is nothing that can satisfy a strict physiological mind, or afford any pathological principles to regulate our conduct, either as to its mode of application, the exact cases to which it is suited, or the remedial adjuvants, which should be employed in conjunction with it. Even in the writings of Baron Larrey, we cannot fail to observe, and deeply to regret, how seldom

it happens that correct physiological reasoning guides us in matters of practice; for, unless I am much mistaken, the following sentences, in which the Baron explains his opinion of the mode of action of Moxa, will be scarcely intelligible to the reader; and still less afford him any satisfactory explanation of the manner in which it acts. The Baron observes, "Ce moyen," (le Moxa) "d'ailleurs nous a paru communiquer dans les parties, avec une masse relative de calorique, un principe volatil, très-actif que fournissent les substances cotonneuses, lorsqu'elles sont en combustion. L'excitation et l'irritation qui résultent de la combinaison de ces deux produits développés par l'insufflation, se propagent de proche en proche jusqu'aux parties les plus profondes, de manière à rétablir l'action des nerfs affaiblis ou paralysés, à arrêter la marche de la cause morbide établie dans telle ou telle partie."*

It has often struck me remarkably, in tracing the various opinions, which may have existed respecting the mode of action of remedies of indubitable efficacy, that theories, however different, however absurd, and even adverse, do nevertheless generally coincide as far as relates to practice, as well with each other as with long established empirical usages; each bending, as it were, and conforming, in order to do homage to truth and experience. Take Iron as an example. The advocates for the mechanical theory favoured the introduction of the preparations of this metal in scirrhus and cancer, upon the hypothetical principle, that whatever is the most forcible in removing obstruction, must be the most proper instrument of cure. Such, say they, is steel, which, beside the attenuating power with which it is furnished, has still a greater force from the gravity of its particles, which being seven times

* See "RECUEIL de MEMOIRES de CHIRURGIE, Par le BARON D. J. LARREY. A. Paris, 1821," pp. 7, 8.

specifically heavier than any vegetable, acts in proportion with a stronger impulse, and therefore is a more powerful deobstruent. Unlike the Mechanical Physicians, the Chemists explained the beneficial operation of Iron upon the principle that it increases the proportion of red globules in the blood, (which they conceived to be dissolved by the virulence of the disease,) on the erroneous hypothesis that Iron constitutes the principal element of these bodies; and, among ourselves, within the last few years, the most absurd of all the speculations respecting Iron has been advanced. Thus, the late Dr. Adams having promulgated the fanciful and groundless opinion that scirrhus and cancer were parasitical animals,—Iron, which had been used by the Mechanical Physicians, upon the principal of a deobstruent, and by the Chemical Physicians as an important means of influencing sanguification, was immediately brought forward, by another practitioner, with all the inflated eulogiums of a newly discovered specific for cancer; and its mode of action explained by him upon the principal of its killing those parasitical animals, upon which the existence of the disease was fancifully supposed to depend!—Hence, we may say in the words of Celsus, “Nec post rationem, medicinam esse inventam, sed post medicinam inventam, rationem esse quæsitam.”*

I have remarked already, that the action of Moxa was generally compared to that of a blister or issue; and I may add, it has been thereby argued, that this remedy does not afford any *peculiar* means of combating disease. I have also remarked, that the incorrectness of these opinions was evident from the considerations, that, in the employment of Moxa, it should ever be a grand object to prevent that state upon which the action of a blister depends, viz. inflammatory action; and that when this state

* See Pharmacologia by J. A. Paris, M. D.

was excited, the remedy was either altogether unsuited to the case, or there was an error in the manner in which it had been employed. I added, that although on some occasions, in which the Moxa was indicated, the formation of a drain might be useful, the specific action of the Moxa occurred, and was terminated, long before the drain was established; and, consequently, that its beneficial influence could not be attributed to that cause.

It must be admitted that the state of the capillaries, or of those minute vessels, which form the medium of connection between the termination of the arterial and origin of the venous system, holds an important rank in the chain of causes which produces structural disease. If the reader requires a proof, let him call to mind cases of the following description. A patient has been attacked by strumous or pustular inflammation of the eye; a Surgeon has been consulted; leeches, blisters, purgatives, emollient collyria, have been employed; still there is excessive intolerance of light; copious discharge of tears, the patient painfully shrinks from every effort, which may be made to open the eyelids; if the Surgeon attempts by force to separate them, he succeeds with difficulty—his attempt being resisted by a spasmodic contraction of those muscles which close the lids, accompanied by a gush of tears. If a glimpse of the cornea be obtained, it is found to have hid itself involuntarily behind the origin of the upper lid; and to exhibit, on some part of its surface, an ulcerated depression, forming a centre, to which a pencil of vessels lead from the morbidly vascular conjunctiva. The Surgeon acquainted with the history of the case, either from the treatment adopted by himself or from the account of the patient, drops into the eye a watery solution of the nitrate of silver; some trifling pain is excited, and in a few hours the irritability of the eye is nearly subdued.

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On the following day his patient exhibits the organ, but is unable to persuade himself that a single application of a few drops of a colorless liquid could produce such magical effects. In connection with such cases I may mention, as scarcely less striking, those cases which exhibit the beneficial effects of a weak solution of the sulphate of alumen, applied at a proper period in purulent ophthalmia; the effects of the sulphate of zinc on the urethra or vagina in certain cases of puriform secretion from these canals; and the influence of astringents in diarrhœa. All the foregoing applications belong to that class of local remedies, which may be called stimulating astringents, or local tonics; and, there cannot exist a doubt, that they produce their effects by an action on the capillaries.

Let the reader now reflect on the rapidity with which the foregoing remedies act and restore to perfect health, parts which have been for a long time the seat of disease; and he must admit that, if I can prove the remedy in question to act on the same principle, and that the diseases to which it is suited are, so far as relates to their mode of cure, similar in nature to those over which the remedies mentioned have so striking an influence, there will be no difficulty in explaining the rapid and remarkable efficacy of Moxa in the cases to which it is applicable.

When we consider the utility of topical remedies in removing superficial diseases, such as ulcerations of the cutaneous surfaces, of some parts of the mucous surfaces, abscesses which communicate with the skin, a great variety of diseases of the eye, &c. &c.—we often regret that we are not possessed of any such means of influencing the more deeply seated organs, and we irresistibly come to the conclusion that many internal diseases—such, for example, as abscesses of the lungs, of the liver, ulcerations of

the deep-seated mucous surfaces, &c. &c., which are, in our present state of knowledge, incurable—might be removed on many occasions, could we reach them with our topical remedies. I say, when we reflect on these considerations, it is evident that the Moxa must afford a powerful and valuable assistance in the treatment of deep diseases, if it be capable of acting on them as our most valuable topical remedies act on those which are superficial.

The experiments, which have been made in our days on the capillary circulation, appear to me likely to lead to very important improvements in the application of our topical remedies; and I conceive that the profession are highly indebted to Dr. Wilson Philip, who led the way in this mode of investigation, and to Dr. Hastings, who has so ably followed in his steps. In the performance of experiments, undertaken with the avowed view of investigating the truth or falsity of a preconceived hypothesis, the mind is so naturally, so irresistibly, I had almost said so uncontrollably bent on seeing whatever is most congenial to its own prepossessions, that I consider myself particularly fortunate in being able to support by the experiments of the pathologists, whom I have just mentioned, the opinions which I have formed of the mode of action of Moxa. As the experiments of these respected authors have been undertaken with an entirely different object, and as it cannot be supposed that there exists, in the account which they have given of them, the slightest straining to meet the hypothesis, they will scarcely fail, if they support my opinion, to be received by the reader as conclusive evidence. I shall, therefore, refrain from bringing forward any experiments made by myself, in elucidation of the subject, except on one or two occasions; and, on these occasions, the experiments do not afford the slight-

est room for error, and may be repeated by the reader without difficulty of any kind.

I shall now proceed to the relation of these experiments, and, I trust, they will prove to the satisfaction of the reader that caloric possesses the power of exciting the capillary vessels of a part to increased rapidity of circulation; that it causes an increase of their tonicity, with diminution of their calibre; and, consequently, that Moxa, whose influence depends on the caloric disengaged, must act as a stimulating astringent or local tonic.

EXPERIMENT I.

“After having observed the natural state of the circulation,” (in the web of a frog’s foot,) “the foot was immersed in water of 110 F^t for half a minute. On bringing it again immediately into the field of the microscope, *the motion of the blood in all the vessels appeared quickened, and they were contracted.* After an interval of two minutes, the foot was again immersed into water of the same temperature, and for a similar time. *The result was as before.*”*

EXPERIMENT II.

“The circulation in the web of a frog’s foot being first attended to, and the foot then immersed in water heated to 115 F^t for half a minute, *the motion of the blood was immediately quickened, and the vessels in some degree contracted.* The immersion was repeated with the same effect.”†

EXPERIMENT III.

“I passed a hot iron through the web of a frog’s foot, by which the skin about the hole was shrivelled, and the

* “See a TREATISE ON INFLAMMATION of the MUCOUS MEMBRANES of the LUNGS,” &c. &c.—By CHARLES HASTINGS, M. D. LONDON, 1820.—p. 81.

† HASTINGS, Loc. cit. p. 55.

vessels obstructed, no fluid of any kind being discharged. *No symptom of inflammation followed, every part of the web appearing as pale as before the experiment.*"*

EXPERIMENT IV.

"An inflammation had been excited, I do not know how, in the web of a frog's foot; having applied it to the microscope, I found the *vessels of the part greatly dilated, and the motion of the blood extremely languid*. In several places where the inflammation was greatest, it had ceased altogether.....I wetted the inflamed web with distilled spirits, at the same time *throwing on it the concentrated rays of the sun, from the reflector of the microscope*. The blood in all the vessels, except in those of the most inflamed part, began to move *with greater velocity*; and in proportion as this happened, *their diameters were diminished, their interstices became less opaque, and the redness of the part was evidently lessened*. After I had despaired of restoring action to the vessels of the most inflamed part, I saw the blood begin to move slowly in a vessel which ran directly through the middle of it. It soon acquired a considerable velocity, and on taking a superficial view of the part through the microscope, the course of the vessel appeared like a streak of a lighter colour through the middle of the inflamed part."

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EXPERIMENT V.

The following experiment was made on Mary M'Keogh, an intern patient of Jervis-street Infirmary. She had been admitted on the 22d July, 1826, on account of a gangrenous ulcer on the anterior and outer part of the right

* "A TREATISE ON SYMPTOMATIC FEVERS, by A. P. W. PHILIP. 4th Edition."—pp. 5, 6.

† A. P. W. Philip, loc. cit. pp. 15, 16.

leg. The experiment was made on the 4th of September : the granulations being then exuberant and spongy. With the assistance of a lens, the capillary vessels could be seen ramifying through them in a beautifully arborescent form. The granulations were much disposed to bleed ; and the integuments surrounding the ulcer were thin, of a brownish color, exhibiting numberless minute vessels in its texture ; which vessels became enlarged and distended with dark blood, if she allowed her leg to hang for a short time : it is proper to observe, that she was subject to occasional discharges of blood from both stomach and intestines.

The size of the capillary vessels in the ulcer having been previously examined with a lens, I burned a Moxa over the surface of the ulcer, gliding it along during its combustion ; and holding it at such a distance as to produce a keen feeling of heat. When the Moxa was burned out, *a diminution in the size of the capillaries was evident, and this diminution was more remarkable, when the ulcer was examined the following morning.*

EXPERIMENT VI.

Richard M'Donnel, aged 53, residing at No. 4, Lower Exchange-street : a man in the habit of earning a livelihood by teaching among the poorer class of children, applied at the Infirmary for the Treatment of Rheumatic and Cutaneous diseases, on the 6th of September, 1826, on account of chronic inflammation of the conjunctiva, accompanied by a *very dilated state of the capillaries* of this membrane. On the 10th of September, I applied a Moxa to the eye, in the same manner as I had applied it to the ulcer of the leg in the preceding case. *A contraction of the capillaries of the conjunctiva resulted, which was observable in half an hour after the application of*

the Moxa, but still more obvious on the following morning.

It is evident that the conclusions, which are naturally deducible from the preceding direct experiments, must receive additional support, if they are conformable to the opinions of authors, whose accuracy we must respect; and, particularly, if such opinions have been founded on an entirely different order of phenomena, and promulgated with an entirely different object. It is, therefore, with much pleasure, that I can bring to the recollection of the reader, the following observations of the highly scientific Mr. Pearson, as detailed in different parts of his "Principles of Surgery." "Perhaps it may appear paradoxical to some, when they see it affirmed, that heat by its proper effects *stimulates and invigorates the body.*"* "When heat is considered in relation to the senses of an animal, it may be regarded as a very powerful stimulant *inciting the moving powers of the living fibres to action.*"† "Heat produces more or less of an expansive motion in all dead matter; whereas such a degree as is consistent with life and health, *occasions a contraction and an increase of tone in the living fibre.*"‡ "If a substance possessed of above 120° of heat be applied to the living body, it will *accelerate the motions of the blood vessels of that part, increase the contractility of their parietes, produce redness, and augment sensibility.*"§

Nor can I avoid observing, that there appears among the most ancient authors, some just conceptions respecting the mode of action of caloric on the living texture. We frequently meet with the phrase, *ignis firmat partes*; and, as Pouteau remarks, "Cet axiome apprend que le

* "PRINCIPLES OF SURGERY, &c. By JOHN PEARSON, F. R. S. LONDON, 1808." Preface, p. xix.

† Loc. cit. p. 173.

‡ Loc. cit. pp. 176, 177.

§ Loc. cit. p. 175.

feu fortifie les parties sur lesquelles on l'applique, et les met à l'abri du retour de la maladie dont ont les a dé-livrées." "The gout," says Galen, in the sixth book of his Aphorisms, "has two causes; the first is the superabundance of gouty humour upon the articulations; and the second is, the weakness of the articulations, which gives way to this humour, and if one of these causes is wanting, the gout will not appear." "Therefore," observes Prosper Alpinus, "by cauterizing the extremities threatened with gout, this humour cannot enter them, *because the fire strengthens the parts.*" Again he adds, "The Egyptians by means of fire correct the relaxation and the weakness of the articulations. It is, therefore, an excellent remedy for all parts *attacked by fluxions.*"*

The foregoing experiments and observations fully authorize the conclusion, that the application of a certain degree of caloric to the living body, is followed by a *contraction of the capillaries*, and an *increase in the rapidity of their circulation*; and that this contraction does not proceed from a mere *physical* action, but is the result of the influence of the heat on the *vital properties* of the vessels.

But while it must be admitted that such is the immediate effect of caloric, it may be conceived that this influence is only transient or temporary; and, therefore, not likely to afford any permanent assistance in controlling or removing diseased action. It appeared, therefore, important to decide, whether the influence of caloric in exciting the actions of the living body, persists after the period of its application. With that object in view, the following experiment was made, and several times repeated with the same result.

* "ŒUVRES POSTHUMES, de M. POUTEAU. Tome Premier," p. 223. & p. 286.

EXPERIMENT VII.

I introduced one of my lower limbs into a fumigating apparatus, at the Skin Infirmary: the apparatus having been previously heated to the temperature of 120 F^t. On taking my limb out, after it had been enclosed in the apparatus twenty minutes, its surface was red, covered with moisture, and its temperature four degrees higher than that of the opposite limb. I now went into a cold bath: temperature 56 F^t. Having remained in it for ten minutes, I found the temperature of my lower limbs on coming out of the bath exactly alike, and four degrees lower than they were prior to my introducing my left limb into the fumigating apparatus. I now remained quiet for half an hour, and upon examining the temperature of my lower limbs, I found the limb which had been in the fumigating apparatus had acquired its natural heat, but that the heat of the opposite limb was yet two degrees lower than natural; and it did not recover its full temperature for several hours.

I have the satisfaction of observing, that the preceding experiment receives full confirmation from the experiments of Edwards, detailed in his admirable work "*De L'Influence des Agens Physiques sur la Vie.*" He observes, at p. p. 250, 257, "*Après un refroidissement capable de diminuer la production de chaleur, le séjour dans une température élevée favorise le rétablissement de cette faculté; car, en exposant les animaux à de nouveaux refroidissemens, leur température baissera d'autant moins vite qu'ils auront été exposés plus long-temps à la chaleur. Il s'ensuit que l'effet de l'application d'une chaleur convenable se prolonge après la cessation de la cause.*"—Again, "*Il est nécessaire de se bien pénétrer de ce principe, que l'application passagère de la chaleur produit des*

effets qui se continuent au delà du temps de son application." — "On voit par là que lorsqu'on est dans les cas d'être souvent exposé à un froid très-vif, on se dispose mieux à le supporter en se procurant dans les intervalles une forte chaleur ; usage des peuples du Nord justifié par les faits précédens."* These facts satisfactorily explain also the manner in which the system bears the practice, sometimes adopted by me, as I shall hereafter mention, of applying cold, immediately after the patient has been exposed to a high temperature : the principles which explain the beneficial therapeutic influence of this practice, will be also spoken of hereafter.

The foregoing experiments and observations, taken in conjunction with experiments 5 and 6 above detailed, fully authorise the conclusion, that the tonic power of caloric persists long after the period of its application : a conclusion which I might, indeed, have been allowed to make from analogy, without any direct proof ; for caloric is at least as powerful an agent as those stimulating astringents, whose effects we observe to persist for an indefinite period after their employment : such for example as the solutions of the nitrate of silver, of the sulphate of copper, &c.

There exists another question respecting the application of caloric, viz. are its effects limited to the point to which it is directly applied, or do they extend more or less beyond this point ? For, it is evident, that if its influence be limited to the surface of the skin, or to the part to which it is directly applied, it can have little or no effect on deep seated or extensive disease ; but, on the other hand, if it

* From our sensations, we would be led to form a different opinion ; but they afford us no correct knowledge of the temperature of our body : we often feel cold, when the thermometer denotes a high range of temperature, and *vice versa*.

be capable of extending its influence to the deep seated parts, it becomes a most important agent, because it may be said to be, perhaps, the only one we are acquainted with, which has this power, and which is possessed of the same mode of action.

In discussing the question of the capability of caloric, to extend its influence along a living texture, beyond the point to which it is applied, we should distinguish the physical from the vital power. There are many who, perhaps, will not be disposed to admit that the power, which caloric possesses of establishing an equilibrium of temperature among all inorganic bodies within its reach, can be considered to operate in living structures; though I cannot conceive how this can be denied, when we reflect on the power of external heat to cause such a dilatation of the living fluids as will produce not merely a fulness of the superficial veins, but even rupture of the deep seated vessels, and consequent mortal effusions into the vital organs: the unfortunate occasional effects of hot baths.* Let, however, this physical influence of heat be denied, there still remains abundant proof that it possesses the power of exciting an action, which can be propagated or extended along the living structures, far beyond the part to which it has been applied.

It has been proved above, that caloric acts on the capillaries, as a local tonic or stimulating astringent; and the power which this class of remedies possesses, of extending their influence by sympathy, from the part to which they

* Unless we admit that there exists a dilatation of fluids on these occasions, it will be impossible to account for the influence which external heat exercises on the deep seated organs. When we consider the quantity of blood, which is determined to the skin by hot baths, &c. it is clear that a smaller quantity must exist in the viscera: therefore, how can we account for a rupture of their vessels, unless we admit a dilatation of fluids, or a contraction of solids—the increased action of the heart cannot account for these consequences.

have been applied, along continuous surfaces or similar textures, is well known. How are we to explain, but in this way, the influence of cold applied to the skin in stopping some of the most profuse hemorrhages from the mucous surfaces? even uterine floodings! And is it not upon the principle of continuous sympathy, to use the language of Mr. Hunter, that inflammation extends from a given point of a vein, through all the venous system, or from a point of a serous or synovial membrane, through the entire extent of that membrane, be it great or small. Is it not quite certain that a number of our tonic remedies, such for example as Peruvian bark, produce their effects on the remotest part of the vascular system, by the impression which they make on the stomach? Nor is it difficult for any person to conceive the possibility of such a sympathy, who has ever experienced "the thrilling and singular feeling, which is produced over the whole body by the acerb taste of the juice of the slow."

Now the direct effects of the Moxa are seldom, if ever, limited to the skin. If an eschar be formed, that eschar extends to the superficial fascia or subcutaneous cellular tissue: and if the Moxa be applied through the medium of a needle, in the manner which I shall hereafter describe, the caloric may be made to extend its influence as deep as we please, by the conducting power of the needle. If the caloric, by either mode of application, be made to act on a *point* of structure, which extends itself indefinitely through the limb or part of the body in which it is seated, as for example the cellular tissue, or the neurileme of a nerve, or the tunic of a vessel, it is perfectly consistent with our knowledge of the mode of action of such remedies, to suppose that its effects may be extended to any length along the texture so acted on.

I am not, however, limited in my proofs of the power

which caloric possesses of extending its influence through organic textures, to analogical reasonings. The reader will find convincing, though unfortunate, demonstration of this influence in the writings of Pouteau* and De Haen.† The former of these authors has recorded one case, and the latter two cases, of fatal inflammation of the brain, produced by the incautious application of the actual cautery to the head. And it is to be recollected, that the vascular texture of the brain is not continuous with that to which the application was made, but merely contiguous, and consequently not so favorable to the propagation of the influence of heat: for it is well known that continuous sympathy is more powerful than contiguous.

There are some phenomena of daily observation, which, if they have occurred to the mind of the reader, may appear to militate against the conclusions I have drawn, respecting the astringent or tonic action of caloric on the capillaries. I allude to the power which the common external application of heat, (as in the instance of approaching a fire,) evidently possesses of causing redness of the skin and a fulness of the superficial veins; for it would appear, upon a first view, that these states are not compatible with the conclusion that caloric produces a contraction of the capillaries. These phenomena are, however, most easily explained.

It is clear, that if the circulation in the capillaries be more rapid than usual, a larger quantity of fluid must pass through them from the arteries into the veins; and as the power of propulsion, possessed by these latter vessels, is not increased, nor their tunics excited to unusual contraction, in the same proportion as the capillaries, it is evident

* "Œuvres Posthumes, Tome 2." p. 44.

† "ANTONIO de HAEN, RATIO MEDENDI, VENETIIS, 1785. Volumen secundum. Cap. xii. De cranii ustione," &c. p. 195.

that there must be an additional quantity of fluid in them ; which, joined to the dilatation of this fluid, from the increase of temperature, will sufficiently account for their enlarged size and turgid state. In the next place, to account for that general blush, which evidently denotes an increase in the quantity of red globules in the capillaries, we must reflect on the appearance of these vessels as viewed through a microscope, during natural circulation. On this subject, I shall adduce the remarks of Dr. Hastings. He observes, “ With regard to the appearance of the blood in the vessels, (under ordinary circumstances,) it may be remarked, that small globules float in a serous fluid. These globules approach much nearer to each other in the arteries and veins than in the capillaries. The most minute of the last vessels admit only one globule at the same time ; and a considerable space intervenes between them, in which space serous fluid is alone observed..” Again he observes, “ When the light is very bright, the globules appear,” (in the capillaries) “ *almost pellucid.*”^{*} It is evident that an increase in the rapidity of circulation must have the effect of producing, in the three orders of vessels, a more uniform distribution of red globules and consequently an augmentation of the number of these globules in the capillaries ; and thereby an increased redness, by causing those globules to become visible, which before were “ almost pellucid.” Consequently, the supposition, that the capillaries are in these cases dilated, is altogether unnecessary : a supposition which is, moreover, opposed to facts already laid down, as the result of direct experiment.

The sufficiency of the means above-mentioned to produce the effects observed, cannot be better illustrated, than by the following extract from the “ *Traité des Ma-*

^{*} Hastings, loc. cit. p. 46.

ladies Chirurgicales," of the accurate and experienced Boyer. "Dans toutes les parties même les plus blanches, le sang circule, et ses globules conservent la couleur rouge qui est leur couleur radicale; or, comme les vaisseaux sanguins des ces parties sont extrêmement déliés, et qu'ils ne reçoivent, pour ainsi dire, que des globules isolés, ils ne se montrent pas avec leur couleur rouge; de même qu'une goutte de liqueur colorée, dans un tube transparent et capillaire, ou une lame de verre colorée extrêmement mince; paroissent blanches. Mais que plusieurs globules de sang réunis s'agglomèrent dans un vaisseau où ils ne passent, dans l'état naturel, que les uns après les autres, ils se montrent, avec leur couleur rouge, à travers les parois minces et transparentes de ce vaisseau, comme plusieurs gouttes de liqueur colorée, réunies dans un tube transparent, paroissent avec la couleur qui leur est propre."*

The foregoing remarks are, however, meant to apply only to the immediate effects of heat on the skin; for if its application be continued for a considerable time, it is found that there results from its action on the capillaries an entirely different order of phenomena. The excitement, which had been produced in the first instance by heat, causes by its continuance an exhaustion of the tonic power of the vessels, and a consequent relaxation and dilatation. There will be then an increased redness from debilitated capillaries. These facts are fully deducible from the experiments of Dr. Hastings. Thus, at the conclusion of his account of Experiment 1, above cited, and which I have extracted from his work, he observes, "After a *third* immersion of the foot in water of the same temperature, and for the same time, the *vessels were dilated*,

* Tome Premier, pp. 10, 11.

the blood moved *more slowly*, and was much redder. To the naked eye the web seemed inflamed. For the *fourth* time the web was put in water of the same temperature for one minute. The arteries, veins and capillaries, became *greatly dilated*, and *the motion of the blood ceased*, excepting in one artery," &c. And in like manner at the conclusion of Experiment 2, above related, and which is also extracted from Dr. Hastings's work, he remarks, "After the foot had been immersed *five* times in water of the temperature as above, (115 F°) the vessels were *much dilated*, the *blood, became redder, moved slowly*, and no globules could be seen; but it appeared converted into a red mass." This important fact, that a stimulating as-tringent will, if applied beyond a certain time, produce an opposite effect to that which, at first, follows its application, shall occupy my attention hereafter.

It has been long since observed by Sæmering, and his observations have been confirmed by others, that the functions of the absorbent vessels are impeded, more or less, in the state of inflammation. From some experiments of Magendie on the influence which plethora of the vessels exerts on absorption, it might be conceived that the distended state of the capillaries, in inflammation, would account for the deficient action of the absorbent vessels in that state. If such be the relations which exist between these two orders of vessels, it will follow, that whatever shall increase the action of the capillaries, will also increase the action of the absorbents; and as caloric has this effect in so remarkable a manner, it might be asserted, *a priori*, that it would afford the means of exciting languid absorption. Or, if the lymphatic vessels are capable of being directly influenced, when they are in a state of atony, by stimulants, it is probable that those stimulants which can act on the capillaries, will be also

able to act on the absorbents ; and consequently it may be expected that caloric will stimulate the languid function of absorption, as it does that of capillary circulation. But, in whatever way we may account for the influence which caloric exerts on the function of absorption, the following experiment, and several others which I could relate, leave no doubt of the fact.

EXPERIMENT VIII.

A child had been many weeks in the Charitable Infirmary, on account of a very extensive burn, produced by its clothes taking flame while it attempted to drink from a kettle which was sitting on the fire. The granulations of the ulcers, which had resulted, were latterly very large, soft, pale, much disposed to bleed ; and with all the care of the dresser, could not be kept down by the ordinary means of treatment. When an ulcer, which was on the breast, was in the state described, I burned a Moxa over it, at such a distance as to excite the feeling of pain, without producing any disorganization. On the following morning, the effect was most remarkable : the granulations of the part, and beyond the part, to which the Moxa was applied, were sunk below the level of the surrounding skin, and might be almost said to form a little well which lodged the matter. This experiment I repeated on other parts of the ulcer, and for several days in succession, and always with the same result.

The relations which exist between the action of those medicines which are called local tonics or astringents, and those which are capable of exciting absorption, were noticed in a particular manner by Darwin ; who, conceiving that the influence of the former could be best explained by their action on the absorbent system, has classed them under the head *Sorbentia*. If this opinion of Darwin have

any foundation, which I think it has, it will afford an additional reason for expecting that those agents, which excite the capillary circulation to increase of action, will also excite the absorbents to a similar state; and, by parity of reasoning, we may conclude that those agents, which are capable of exciting the absorbents, will have a similar effect on the capillary circulation. Thus, digitalis, mercury, &c. &c. may have a double influence in some diseases: acting directly on the function of absorption, and indirectly on the capillary circulation; and have we not daily proofs of both modes of action in their powerful influence over certain forms of inflammation?*

From the experiments and observations which have been laid before the reader in the present section, I trust he will consider me entitled to conclude, that caloric applied under certain circumstances, and with certain restrictions, stimulates in a powerful manner the capillary vessels, causing them to act with more force, to contract their diameters, and to circulate their blood with greater velocity; and that, either by this action on the capillaries, or by a direct action on the lymphatics of the part, it has also the power of exciting in a remarkable manner the function of the absorbent vessels. And, further, that the beneficial influence of Moxa in curing or relieving disease must depend on its tonic action over the functions of absorption and capillary circulation, for it has been already shown that the other effects of this remedy are incapable of affording any explanation of its beneficial influence; for, on one hand, when the Moxa is properly applied, there is scarcely any inflammation excited; and,

* See "A Case of Inflammation of the Ear, &c." in the "Transactions of the College of Physicians in Ireland, Vol. II." in which Dr. GRATTAN has made some very interesting observations on the influence of mercury and digitalis in inflammatory diseases.

on the other hand, its beneficial influence occurs and has terminated long before a discharge is established.

From all that has been said, it therefore appears, that the action of Moxa on deep-seated disease, is precisely similar to that which is exerted by some of our most valuable agents on superficial disease ; and, therefore, that there can be no difficulty in accounting for its remarkable efficacy and the rapidity with which it accomplishes the relief of some of those affections, to which its therapeutic influence is suited. Moreover, it is evident, as caloric is the only agent which has the power of acting in this way, or at least with the same energy, on deep-seated disease, we cannot substitute any other remedy in its place. Hereafter I shall endeavour to show that there is a resemblance between the local or tonic action of heat, and the effects which arise from galvanism and acupuncture ; but these two latter agents exert an influence so vastly more transient and rapid, that their action holds with caloric much the same relation as the diffusible stimuli, alcohol, ammonia, &c. do with the more permanent effects of bark, iron, arsenic, &c. &c.

Holding in recollection that the Moxa acts on the capillaries and absorbents as a local tonic or stimulating astringent, energetic and continued in its influence, I shall now proceed to the consideration of the form or stage of disease suited to its action.

SECTION III.

OF THE SELECTION AND PREPARATION OF CASES FOR THE APPLICATION OF MOXA, &c.

“ While the vessels are under the strong action of their tonic contractility, there could not be worse practice than to administer stimulants.”

“ ELEMENTS of MEDICAL LOGIC, by Sir G. BLANE, Bart.” p. 123.

FROM the nature of the action which caloric exerts on the organic structure, when used as a therapeutical agent, it follows that the Moxa should be employed in those cases only, in which there exists a state of debility of the capillaries, a consequent retardation of their circulation, and a diminution of absorption ; and that it must be injurious if employed in cases, where there is increased action or active inflammation.

I have known, on many occasions, striking proofs of the correct foundation of these conclusions. I have heard of, I shall not say, irretrievable mischief from the employment of Moxa in the state of increased action and acute inflammation ; but, I shall say, I have often heard of much unnecessary pain having been produced, and considerable aggravation of those symptoms which it was meant to relieve. I will candidly admit, that misap-

plications of a similar kind occurred in my own practice, before I had formed a correct opinion respecting the mode of action of this powerful remedy. Having been taught to suppose that its therapeutic influence was analogous to that of a blister, I formerly employed it indiscriminately in those cases in which blisters are commonly applied; and it is not necessary to observe, after what has been said, that it must have often failed to produce the relief I intended. Indeed, it was the opposite results which occurred on different occasions, *apparently* similar, that led me to investigate the character of those cases in which it was beneficial, as compared with those in which it either failed or was injurious; and, by this investigation, I was first led to a just view of its mode of action.

Let me here remark again, and particularly impress on the reader, that, although the effects of Moxa are so universally compared to those of a blister, it can never be used upon such a principle. Certainly heat may be so applied as to excite, like blisters, vesication, and discharge, and cutaneous inflammation; but while it produces these effects on the skin, it will act on the deep-seated parts as a powerful stimulant, and thereby often cause, in cases to which blisters are peculiarly suited, more injury than it can do good.

The foregoing views, respecting the mode of action of Moxa, satisfactorily account for a circumstance observed in the practice of Larrey. On reading the cases detailed by this experienced Surgeon, it will be remarked that, on many occasions, the employment of Moxa was preceded by measures, more or less active, to overcome inflammatory action; while, on other occasions, no such preliminary steps were adopted; yet we are not told the cause of these peculiarities, and the reader is

consequently unable to afford himself any rule of conduct, by which he could determine the cases, in which such measures ought to be used, from those in which they are not necessary. But if he will, during his perusal of the interesting cases related by the Baron, hold in view the mode of reasoning which I have adopted, all will be clear and satisfactory.

Let it, therefore, be laid down as a principle not to be deviated from, that this remedy shall never be employed in cases of increased action, or of active inflammation, or even in cases of sub-acute inflammation; that is, when the acute inflammation is lapsing into the state of chronic action; and this principle should be implicitly adhered to, whether the active inflammation has attacked parts previously in a state of health, or has supervened on the state of passive inflammation.

I admit all the difficulty which exists in distinguishing, in certain cases, the state of acute from that of chronic inflammation: a difficulty which oftentimes, even in cases of superficial disease, requires all the powers of discrimination, which the most accurate observation of existing symptoms, joined with the closest investigation of the previous history of the case, can afford. Where is the surgeon who has not found it necessary to pause, in cases of inflammation of the eye, and ask himself the question, shall I now stop the use of my emollient and antiphlogistic remedies, and replace them by stimulants? or shall I for some time longer pursue the former? If the difficulty be so great, when the vessels, which are the actual seat of disease, are visible, it cannot be less when the Surgeon is deprived of that source of information. In fact in deep seated disease, as in superficial, a degree of doubt will frequently exist; but, in all such cases, the prudent Surgeon will, if he commits any error, err on the safe

side ; and, whenever there exists a question, he will prefer the delay and inconvenience, which may result from the employment of remedies suited to lower increased action, although these remedies might probably have been dispensed with, to the possible risk of having recourse to a remedy which, from its injudicious employment, might be a cause of great aggravation of symptoms, unnecessary pain to the patient, and a much greater delay in bringing the case to a favourable termination, than if he had fallen into the opposite error.

It would not be compatible with the objects of this publication to investigate fully those circumstances, which will enable the practitioner to distinguish the cases of acute or active inflammation from those of passive inflammation, for these circumstances are common to the diseases here treated of, and to all others. At the same time it may be useful to mention, in a summary manner, the more particular points to which attention should be directed in the diseases under consideration, for the purpose of arriving at a correct diagnosis of these opposite states. These circumstances are, the date of disease, the habit and mode of living of the patient, the state of the general functions, and the character of the pain.

If the disease be recent, if the patient be young and plethoric, and if his mode of living be such as to dispose to general plethora, appearances would lead us to expect the existence of active inflammation, rather than the opposite state ; which opinion would be further strengthened by the co-existence of general and continued febrile symptoms. Cases, however, so clearly marked will seldom occur ; and it is in those which are less obvious, that we feel embarrassment. In the latter cases, I have generally regulated my conduct by the character of the pain. If this be constant, or if it only slightly remits,—if it be

much increased by pressure and aggravated at the moment of exertion, I uniformly act on the supposition that there is increased action. On the other hand, if the pain be completely intermittent, and although increased after exercise, if it be less severe or but little aggravated during the act of exertion, and alleviated or but little increased by pressure, I dispense with the employment of those measures which are calculated to lower action, and at once enter on the application of Moxa, either alone or in conjunction with the adjuvants which I shall hereafter mention.

It has been generally said that acute differs from chronic inflammation in being attended by an increased action of the larger arteries leading to the parts inflamed; but it would be more correct to say, that the increased action of the larger arteries in acute inflammation is continued, and in chronic inflammation intermittent. It will, in fact, be found, that in acute inflammation, there is a permanently increased action of the larger vessels of the part, and that in chronic inflammation, the increased action of the same order of vessels is intermittent; and, also, that in the state of active inflammation, the febrile symptoms are continued, while they are intermittent in the state of chronic inflammation.

It must be admitted that there is, in the state of active inflammation, at certain periods during the diurnal revolution, an exacerbation of symptoms, both local and general, which is more or less obvious, under different circumstances; but neither this increased action of the vascular system, nor the constitutional symptoms which attend on it, completely subside, as they do in chronic inflammation. The diminution, which takes place in the symptoms of active inflammation, amounts, at the most, to a very imperfect remission. Whereas, in the state of chronic inflam-

mation, the intermission is often so complete, that a patient, who shall be in extreme torture, and whose vascular system shall be in a state of excessive action at one period of the day, shall, at intervals, be free from distress : these intervals or intermissions being more or less regular in their recurrence.

I would wish to impress on the reader, in the strongest manner, the distinction just laid down. He will find it of much importance in practice, in assisting him to draw a diagnosis between the opposite states of chronic and acute inflammation ; and, by close observation, he will find the principle applicable to every form and degree of disease, from a scratch or pimple on the skin, to a complete disorganization of the most vital parts.

There is one difficulty, however, which occurs in the application of this rule, arising from the frequent combination of the two states of active and passive inflammation. Thus, if a patient labours under disease of a joint, one part of the joint may be in the state of active inflammation, and another part in the state of passive inflammation ; or, in cases of consumption of the lungs, one tubercle may be in a state of active inflammation, and another in the state of passive inflammation. On such occasions, although the intermission may be perfect as far as relates to the chronic action, the state of active inflammation which exists, will prevent the occurrence of a general intermission. The history of each case will, however, for the most part, remove all misconception. It may also be remarked that the diagnosis is not, on these occasions, of so much importance, as the treatment must be of a compound nature, or calculated to meet, as far as possible, these opposite states.

When we reflect on the probable finite object of the increased action of the vascular system, which attends

local inflammation, both acute and chronic, and when we consider the exhausted state of parts in the chronic form of disease, we shall have a ready explanation of the intermittent increased action of the vascular system in these latter cases. It depends, in fact, on an incapability of the parts to support that permanent increased action, which is necessary to produce a cure. After a short struggle, the motive powers of the weakened vessels become exhausted, and they sink into a state of apparent quietude until they recover tone for a fresh rally. Those states of intermitting excitement of the general vascular system on the one hand, and of the part on the other, being often insufficient for the removal of disease, produce the states of hectic fever and local disorganization, which are the necessary attendants of the state of chronic inflammatory action.

It is obvious, that when the state of tone of either the system or part is insufficient to support those actions which are necessary for the restoration of health, and when the morbid actions in consequence assume the intermittent form, the essential object to hold in view is the restoration or improvement of general or local tone; but as our means of accomplishing these objects depend on the administration of remedies, which are essentially stimulant, the greatest judgment is required so to regulate the dose and period of administration, as will prevent them from adding to the original disease by exciting too much action, or by increasing the paroxysms of increased action, which result from the spontaneous efforts of the system or of the parts. If these opinions be correct, tonic medicines both local and general will be more suited to the case, according as it shall be more purely intermittent, and this is in fact what we observe in practice. These principles also explain the remarkable efficacy of general

tonics on many occasions; such, for example, as the influence of bark and arsenic in ague, and the influence of local tonics or astringents in removing discharges, when the action attendant on them becomes chronic or intermittent: and the same principles explain the powerful energy of Moxa as a local tonic.

But to return to my more immediate object. It is not necessary for me to enlarge on the means best suited to the end of reducing action in those cases in which it may be required. There are, however, some of these means, upon which I would wish to say a few words.

One of the most useful external remedies for the reduction of increased action in such cases as those under consideration, is the warm bath; but there is none more subject to abuse. The employment of this remedy requires a great degree of caution, for if its temperature be too low or too high, it will have an opposite effect to that intended. It should not, if applied as an antiphlogistic, be used on any account of a higher temperature than 97 F^t. nor lower than 80°. The patient should also remain in it much longer than is customary; never less, except some inconvenience is experienced, than forty minutes; and, in general, great advantage will be obtained from a much longer immersion.

Surgeons are well aware of the utility of evaporating lotions, as a means of subduing increased action, where the increased action is accompanied by a considerable elevation of temperature. The difficulty experienced in applying this remedy, so as to procure with certainty its good effects, is so much felt, both in hospital and in private practice, that it is used, perhaps, less frequently than under other circumstances it would. This difficulty consists in our not possessing the means of keeping up an equal and uninterrupted evaporation, even when the en-

tire attention of a nurse is devoted to the object. It would, in fact, require a greater degree of vigilance, than in common circumstances we can expect, to supply the part both day and night unintermittingly with a fluid of the proper temperature, and in the same quantity. Indeed, as it is commonly used, it, in general, does more harm than good. A cloth, wet with the lotion, is laid on the part; and, in nine cases out of ten, this cloth is so supplied with the lotion, that it will be found as often dry and hot as wet and cold. Very often the application of the lotion is suspended, more or less, during the night, and even when it is used with the greatest care, it is almost impossible to employ it with such accuracy that the part shall not feel any vicissitudes of temperature; and these vicissitudes having the effect of exciting action, there may be more mischief than good done by the application.

The foregoing considerations induced me, some time ago, to devise an instrument for the application of evaporating lotions, and I have succeeded in constructing one, which is remarkable for its simplicity and efficacy. By it, the lotion may be applied uninterruptedly, both day and night, of any temperature required; and without the assistance of any nurse-tender, except to set it going; after which it will continue to supply the part for many hours, without the least attention, with any quantity of fluid which may be necessary. This instrument is now used in the Charitable Infirmary, and great advantage is derived from it; not only because it affords the means of treating such cases as require evaporating lotions, with greater accuracy and care, but, also, from its causing a saving of expenditure in bed linen; for, as evaporating lotions are commonly applied, the beds become wetted from the superabundance of fluid which is poured on the part, for the purpose of keeping the cloths, with which it

is covered, wet as long as possible. This instrument supplies no more than the exact quantity of fluid which is carried off by evaporation; and, consequently, there is none allowed to pass on the bed linen.*

The composition of evaporating lotions must vary according to circumstances. If the regulation of temperature be alone required, water will answer our object. If the agency of a stimulant or astringent be necessary, either for the purpose of preventing the influx of fluids into the part and thus oppose inflammation, or to excite the languid state of the capillaries, the water should be impregnated with a greater or smaller proportion of alcohol, or of vinegar, or with preparations of lead, ammonia, &c. The impregnation with alcohol will increase the power of the water to reduce temperature, by rendering it more easy of evaporation. But alcohol will seldom be required for this purpose, as pure water applied by the instrument above alluded to, will preserve as low a temperature as can be ever wanting.

Without going into any physiological explanation of the fact, I believe it may be said, that active inflammation never occurs without an elevation of temperature in the part. It is rational, therefore, to conclude, that if we were possessed of the means of preventing an increase of heat of a part, we might with certainty prevent inflammatory action in that part. And although the propriety of carrying such a proceeding to a great extent might be doubted, when the inflammation arises from a peculiar state of the system, or in other words, when it is, as has been called, spontaneous,—there can be no doubt of its propriety, when the inflammation is the result of external injury. Of course, in cases of deep internal

* See the Plate which accompanies this Work.

inflammation, we cannot regulate the temperature of parts in which the disease may be seated, but we have full power over such parts as are superficial, and particularly over the extremities.

The employment of these lotions, however, requires great judgment. For if the inflammatory action has existed for some time, such a state of the vessels must have ensued as will require time and increase of action for their recovery. Therefore, if the employment of evaporating lotions, or any other means of reducing action, be employed in such a degree as to prevent those actions which are necessary to restore the parts, great delay in the recovery will be the consequence. Again, if a similar practice be adopted in spontaneous inflammations, metastasis or retrocession of the morbid action to some more vital organ may result.

Were it not deviating too much from the proper objects of this publication, I could adduce many cases in proof of the very remarkable efficacy of evaporating lotions, when assiduously applied, and properly modified according to the exigencies of each case. I shall, however, content myself with relating a single instance; and with observing, that since I constructed a proper instrument for the application of these lotions, I have been able to dispense with local bleeding in a great variety of injuries of the extremities, in which it would, under other circumstances, have been absolutely necessary.

CASE.

Thomas Daly, aged 74, a labourer in the employment of Mr. Walter Doolin, of Ormond-quay, builder, was admitted into the Charitable Infirmity, on the 7th day of May 1823. Immediately before his admission, he had fallen from the rafters of a new house to the ground

floor, having passed between the joists of three rooms, which were not floored. I found several of his ribs smashed, the trunk bruised in several parts, and the left femur fractured. The principal injury had, however, been inflicted on the left knee. The joint was not wounded externally; but, on grasping it with my hand, it felt as if it were a bag filled with small splinters of bone, or with small angular stones. In fact, the ends of the tibia, femur, and the patella, which form this joint, were shattered into innumerable fragments, and the leg was, in consequence, so loosely connected to the thigh that it could be moved in all directions—even in the direction of extension, abduction and adduction, so as to form nearly a right angle with the thigh.

A consultation was immediately held of the Surgeons of the Hospital and of others, at which Messrs. Wilmot, Kirby, Carmichael, Adams, &c., were present. It was decided that I should remove the limb. The operation was proposed, but the man refused; and from his age, and his situation in life, it was not urged. His age also forbade the abstraction of much blood, and, therefore, my only resource consisted in opposing inflammatory action by the assiduous and proper application of lotions.

The limb was put in an extended position, a small number of leeches were twice applied. The temperature of the knee was not allowed to rise above its natural standard. No untoward symptom whatever occurred, and on the 16th day of November, following his admission, he was discharged, able to walk extremely well with the assistance of a stick.

A few days ago, I visited this patient to ascertain his present state. He declared the limb was quite as useful to him as the other, and that he was able to pursue his daily labour. He used no stick, and could walk with firm-

ness. The joint was not more easily fatigued than that of the opposite limb, nor was it at any time affected with pain. The patella felt slightly moveable; and, when he walked, the femur appeared to move on the tibia as if the articulating surfaces of both bones were flat. He could stamp or press his foot with full force against the ground, and could bend the leg on the thigh to an angle of about 135 degrees. The appearance of the joint was not deformed, except by a small projecting bony knob, seated at the outer part of the joint, above the head of the fibula.

Another external mode of diminishing inflammatory action, in such cases as those under consideration, is the local abstraction of blood. I believe Surgeons are tolerably agreed, that in all cases which require local bleeding, if the disease be deep-seated, cupping should be preferred. I shall not stop to inquire on what its superiority depends, but I am quite certain that, in such cases, if executed in a satisfactory manner, it is preferable to leeches. It is, however, much to be regretted, that the operation in many instances fails; and the practitioner is often disappointed by hearing that the quantity of blood prescribed had not been obtained. This I am convinced arises, not merely from want of dexterity in the operator, but from the operation itself being essentially imperfect, as it is performed in this country, with the spring-scarificator.

Among the objections to this mode of performing the operation, it is scarcely fair to consider the bad state in which we generally find the scarificator; for this might, of course, be remedied by particular attention. At the same time, it must be admitted, that the difficulty of preserving the spring-scarificator in proper order, is a very considerable practical inconvenience. But there are other objections to this instrument, which are altogether in-

separable from it. Among these the following may be mentioned :—

1st. With the spring-scarificator, it is impossible to make every part of the incisions of equal depth. This arises from the manner in which the lancets enter and escape from the skin : from this cause, the beginning and end of the incisions must necessarily be less deep than the middle portion. Therefore, if we make the lancets cut only to the proper depth in the middle, the incisions at the beginning and end will not be deep enough ; and if they be deep enough at the beginning and end, they will be too deep in the middle.

2d. When we have occasion to perform the operation over any of the cavities, or on subjects whose flesh is soft and unresisting, in a vast number of such cases, the operator will find great difficulty in so apportioning his pressure to the yielding state of the subjacent parts, that his incisions shall be exactly as deep as he had calculated on, when setting the lancets of his scarificator. I have frequently observed this unsupported state of the skin to have such an influence that, when the instrument has been used, it has left scarcely the trace of an incision ; and, on other occasions, I have observed the operator, fearful of such an event, press with so much force, and make his lancets cut so deep, that his incisions have entered the adipose substance ; and this substance, protruding afterwards through the wound, in consequence of the suction of the glass, has rendered the operation nearly abortive.

3dly. The number of incisions, which can be made by the spring-scarificator at one application, are much too few, and also too short ; and the interval between them is, therefore, so great, that only a small portion of the surface inclosed in the glass is incised ; and consequently, the

blood can escape at a few parts only : hence an additional obstacle to our obtaining a sufficient quantity.

The foregoing considerations have induced me, for some time past, to prefer the following mode of performing the operation of cupping ; and since I have adopted it, I have never failed to obtain any quantity of blood required ; nor have I ever seen it fail in the hands of those pupils, who have adopted it by my directions.

In the first instance, let me observe, that for the purpose of exhausting the cupping glasses, the combustion of a few drops of any spirituous liquid on a little tow or lint, is the mode which I much prefer ; not only because it is more convenient, by enabling us to dispense with a number of instruments, but also because the degree of heat produced renders the circulation in the cutaneous capillaries more rapid ; and, consequently, facilitates the discharge of blood, when these vessels have been divided. A cupping glass having been thus exhausted and applied for some minutes to the part, as well for the purpose of determining to the skin, as to mark the extent of surface which should be scarified, with the assistance of a lancet-scarificator or gum-lancet, as it has been called, drawn lightly over the skin and with great rapidity, I traverse the surface as far as the mark formed by the edge of the glass, with superficial incisions, about the fourth of an inch distant from one another. These incisions should be so slight, as to be scarcely visible. The operator need not fear that they will not bleed, for the moment the cupping glass shall be applied, the blood will be found to stream from them with a rapidity which quite surprises those, who, for the first time, have seen the operation thus performed.

It is not possible, without comparing this operation with the one commonly practised to be sensible of its great superiority. From its description, the

reader may suppose that it is more tedious, and therefore more painful; but, I assure him, he would be surprised at the rapidity with which the lancet-scarificator may be made to traverse the surface; and that this operation is not so painful as that in common use, I have had innumerable opportunities of ascertaining, by leaving the kind of operation to the selection of the patient; for always, without exception, the lancet-scarificator has been preferred, after there has been an opportunity of comparing the two operations.

The structure of the integument explains the superiority of this mode of operating, and affords proper rules for its performance. The vascularity of the skin is so very different on the external and on the internal surface, that the former may be considered as one of the most vascular textures of the body, while the latter is one of the least vascular. The external surface is, in fact, clothed by a network of capillaries so extremely minute, and at the same time so infinite in their inosculation, that they can be compared to nothing, with so much accuracy, as to a beautiful fine web spread over the entire skin; and this web is so confined to its outer surface, that, if the skin be injected with vermillion and size, the exterior will appear as red as scarlet, and the interior as white as paper. Underneath this vascular web, the nerves are expanded, from which the sensibility of the skin, as an organ of touch, is derived.

When we reflect on the low vascularity of the internal surface of the skin, we must conclude, that no advantage can arise, in the operation of cupping, from its division; and when we consider that the nerves of the skin are expanded over its surface, beneath the capillary web, we should take care to make our incisions so very superficial, that they shall inflict as little injury as possible on this

nervous expansion. Both the foregoing considerations, therefore, authorize the practice of making our incisions extremely superficial. It may be asserted, that it is not practicable to cause the scarificator to traverse the skin so lightly, as not to cut through the nervous expansion. I am of a different opinion, because I cannot account for the trifling pain which patients experience from this operation, without supposing such to be the case: they always compare the pain of the wounds, inflicted by the lancet-scarificator, to that which is excited by drawing a pin over the surface. I think, moreover, the quantity of blood, which we shall obtain from the division of this capillary net-work, will be increased, if our incisions do not penetrate its whole thickness; for we know that a vessel, partially divided, will pour forth its contents more profusely than if its section has been complete.

The mode of cupping, which I have now described, is the one which is, I believe, generally adopted in the south of Europe; while in Germany, and in the North, a spring-scarificator, such as is used in these countries, is the instrument employed. I was formerly in the habit of using, as I have already mentioned, the common gum-lancet as a lancet-scarificator; but I have latterly adopted that form of instrument which is employed by the Baron Larrey, and of which I have given a drawing. This will be found to answer the purpose extremely well.

The simplicity to which the operation of cupping is thus reduced, is no trifling recommendation in its favour. The Surgeon can be at all times provided with his scarificator; and, if, on visiting a patient, he find the local abstraction of blood urgently called for, he can immediately proceed to the operation; for he can, in every situation in which he may be placed, obtain a vessel which will answer for a cupping glass, and also a small quantity of a

spirituous fluid, and this is all the apparatus that is necessary. Much and most valuable time may thus be frequently saved, which is often lost in hunting for leeches and for instruments, to the serious and probably irreparable injury of the patient.

On the subject of those remedies which are suited to the reduction of increased action, and which act on the general system, I have but little to say. In employing such remedies, we should carefully bear in mind that these diseases have all a tendency to pass to the intermittent or remittent form, and consequently, that they are more or less atonic. We should, therefore, be cautious in our employment of general evacuants, lest unnecessary debility ensue, and thus produce a fresh barrier to the removal of the disease. We should prefer those medicines, which lower action, without causing much loss of power. Among these digitalis, colchicum, mercury, and antimony, hold prominent places; and if they be judiciously employed, general depletory measures will be but little necessary.

Having, in this and the preceding sections, investigated the mode of action of Moxa, and the nature and stage of disease to which its employment is suited, I shall now proceed to lay down practical directions for its various forms of application.

SECTION IV.

OF THE VARIOUS MODES OF APPLYING MOXA.

“ Ne craignez rien de la résistance des malades, leurs douleurs sont si cruelles que la brûlure la plus active sera foible en comparaison.”

ŒUVRES POSTHUMES DE M. POUTEAU, TOME. I, p. 217.

VERY different substances have been used in different countries to cause Moxabustion : the Nomades employed, for this purpose, wool, as well as certain spongy substances growing upon oaks, and springing from the hazel—the Indian the pith of the reed, and flax, or hemp, impregnated with some combustible material—the Armenian the agaric of the oak—the Chinese and Japanese the down of the Artemisia—the Thessalian, dried moss—the Egyptian, Arracanese, and several oriental nations, cotton—the Ostiaks and Laplanders the agaric of the birch—and the Aborigines of North America, cotton and dried wood. At present, in France, Baron Percy prefers the medulla of the Helianthus Annuus or sun flower, and when this cannot be obtained, he recommends cotton impregnated with a saturated solution of the nitrate of potash; and Baron Larrey uses a cylinder formed of carded

cotton, unimpregnated and surrounded by a capsule of linen. The cause of such a vast variety of substances being employed by different people is easily explained, when we consider, that, in those countries in which Moxa is much employed and its value known, it has been the universal custom to attribute a portion of its medical efficacy to some peculiar volatile substance disengaged during its application.

It is not necessary to inform my reader, that caloric is the only agent evolved, during the combustion of these various substances, from which any therapeutic influence can be expected. We should select a substance, whose combustion will take place slowly, but steadily. If the combustion be too quick the effects will be too transitory, and if too slow it will require the use of the blow-pipe, which complicates the operation, and unnecessarily alarms the patient. I have been fortunate enough to discover a mode of forming Moxa, which is free from both objections : it burns slowly, but steadily, with the assistance of the blow-pipe if we please, without any sparks, without the least trouble to the Surgeon, and without alarm to the patient, for its combustion is scarcely observable. It is formed by immersing either Surgeon's lint or fine linen, in a filtered solution of chlorate of potash : the solution being made by dissolving one drachm of the salt in four ounces of distilled water. When the Moxa is to be used of a small size, fine linen will answer best, but when of a large size, lint is to be preferred. Care must be taken that the substance used shall be perfectly dry, before it be folded up, and in folding it, a proper degree of firmness must be given, which experience will soon teach. After the substance has been rolled up and fastened with two or three stitches of the needle, its end should be cut with a very sharp

knife, to make it perfectly level, and thus secure its application to every part of the skin upon which it is placed. Its length should be about three-fourths of an inch, and its diameter may vary from one quarter of an inch to an inch.

The instruments which I use in applying the Moxa are of the most simple kind : a *porte-aiguille*, which I have invented, (see Plate) or a pair of dressing or artery forceps, furnished with a screw at about three-fourths of an inch distant from their point, which screw serves to press the blades of the forceps very tightly together ;—a bit of small, flat, silver wire, about three inches in length ;—a bit of card paper ;—a blow-pipe ; a set of needles ; and a small glass tube, are all that are required. With the silver wire a small hoop is formed to grasp the Moxa : the size of the hoop being made to vary according to the size of the Moxa ; and the ends of the hoop are grasped in the forceps, which are made tight on it by the screw with which they are furnished. The hoop should be applied about a line distant from that end of the Moxa which is to be placed on the skin ; for the purpose of preventing any inconvenience from the hot wire coming in contact with the surface. In fixing the ends of the hoop in the forceps, such an angle or inclination of the Moxa with the forceps should be given, as will be found most convenient for the exact application of the Moxa to the part affected.

The Moxa should be applied in painful affections to the point where the greatest distress is felt, if it be possible so to do ; and in paralytic affections, it should be first applied over the origin of the nerves which lead to the diseased parts, and afterwards along the same nerves in different parts of their course. Those continental Surgeons, who have given directions respecting the application of the Moxa, have spoken in a particular manner of the

parts to which it is proper to apply it, and of the parts to which it should not be applied. On this subject, it is not, in my opinion, necessary to enlarge. In these countries no one will use it, unless such as are acquainted with the anatomy of the parts upon which they are operating; and to them it is unnecessary to say any thing. Moreover, as will just now appear, there is scarcely a part of the body, to which it may not be applied in one form or another: even to the eye it may be applied in the form of the objective Moxa, as I have often done, with great advantage, in some cases of obstinate chronic ophthalmia.

The size of the Moxa, the manner in which it should be applied, and the length of time it should be allowed to remain on the part, are points of some importance.—All these circumstances must be regulated by the depth of the disease, and the nature of the parts, to which we may wish to apply it. It may be used, so as not to cause any injury of texture; in a greater degree so as to produce vesication; and in a still greater degree an eschar, and the eschar may be either deep or superficial; or, lastly, it may be employed in conjunction with the acupuncture needle. These different modes of using the Moxa may be distinguished by the terms, first, second, third, fourth, and fifth, forms of application.

The first form of application will answer when the disease is very superficial. It constitutes the objective cautery of the French writers, and is highly extolled by *Faure* in the *Mémoires de l'Académie Royale De Chirurgie*, Tome 15. 12mo, as a powerful remedy for the cure of ulcers. It may be serviceable in neuralgia, when the nerve is very superficial; or in affections of the joints, when the synovial membrane is immediately under the integuments, as is the case in the knee and wrist. When used, it should be repeated at least once a day, and applied

by holding the Moxa in the forceps, as close to the part as the patient can comfortably bear; at the same time it should be moved slowly over the surface, backwards and forwards, until its combustion has terminated.

I seldom have recourse to the second form of application, because it is not so effectual as the third, and it is more troublesome in its after treatment. It may, however, be usefully employed in *Tic Douloureux*, and to those parts, on which the patient would not wish a cicatrix to be formed. In such cases the Moxa is applied by holding it steadily, and as close as possible to the skin, without allowing it to touch it, and until the skin appears white; which appearance is owing to the detachment of the cuticle, and the formation of a blister.

In a large proportion of cases the superficial eschar will be the best form of application. To produce this eschar, the Moxa must be placed on the skin, and allowed to remain on, until the skin appears brown under it; which will, in general, be found to take place, when the combustion of the Moxa has extended to the distance of about a line from the skin.

The deep eschar will be required, when the seat of the disease is far removed from the surface, as in affections of the spinal marrow and of the hip. To form this eschar the Moxa must be allowed to remain on, until its combustion is complete; when the part upon which it was seated will be found black, and the surrounding skin slightly red, and wrinkled. In this form of application, it will be sometimes useful to encrease the intensity of the heat by the employment of the blow-pipe; and when this is thought prudent, the Moxa should be, previously to its application, surrounded by a cylinder of card-paper, which will have the effect of directing the current of heat downwards, and prevent its escape laterally.

When our object is to obtain any of the effects last described, it will be advisable, previously to the application of the Moxa, to mark the spot on which we may wish to place it, with a little circle of ink ; and in case of using the blow-pipe, we should cover the surrounding parts, with a piece of paper, having a hole in its centre for the Moxa : the paper having been previously wet in a saturated solution of the sulphate of alum, or muriate of soda, and afterwards dried. These solutions diminish so much the combustibility of the paper that it will prevent it from taking fire, in case a spark should be driven off by the blow-pipe.

On several occasions, as for example in paralysis, and some obstinate forms of sciatica, the frequent repetition of the Moxa will be required, before the disease is subdued ; and the disease is so far removed from the surface, that, to act on it, an eschar must be produced. When the eschars are thrown off ulcers are formed, and where they are very numerous, they cause considerable irritation to the patient, and the discharge produced by them may be more than is suited to the weak state of his system. In these cases the application of the Moxa, in conjunction with the needle, will be found a most excellent mode of using the remedy.

When the Moxa and acupuncture needle are used in conjunction, the following is the mode of operating.—I perforate a Moxa of a proper size by a needle, of such a length, as will be sufficient to reach to the seat of disease, and at the same time extend so far beyond the surface of the skin, as to keep the Moxa about one inch from it, or so far as to secure the texture of the skin from injury. The needle is then introduced as far as the seat of disease, by the assistance of the Port-aiguille ; and, as soon as it has been introduced, the Port-aiguille is

removed, the needle being left in the part. The Moxa, which had been previously perforated, should be now placed in a state of combustion on that end of the needle, which projects beyond the surface of the skin, and allowed to burn round the needle by which it is thus transfixed. The heat disengaged from the Moxa is communicated to the needle, and thence conveyed to the seat of disease. When the needle has cooled it is removed, and the wound or eschar produced by it is scarcely observable. I have also employed, with remarkable efficacy, the preceding mode of using the Moxa, in cases which required the intense application of this remedy; but in which the texture of the skin could not be injured, nor an eschar, with propriety, formed.

It is recommended by Larrey, that immediately after the application of the Moxa, the skin should be wet with the water of ammonia, and this for the express purpose of preventing the occurrence of inflammation: the very effect, which those who do not understand the mode of action of Moxa, are desirous of producing!! Upon what principle the Baron expected such a result from the application of ammonia, I know not, for he has not made any remark upon the mode of action of this application. Its effects are, however, such as he states, and clearly explicable, as will hereafter be proved, on sound physiological ground. It, will, however, answer the same purpose to apply any other powerful stimulus. Alcohol, æther, turpentine, or ammonia, may be indiscriminately used; or even bruised garlic, which Ten Rhyne recommends in his work *de Arthritide*. The neatest mode of applying the water of ammonia, alcohol, &c. is by a glass tube. The fluid ascends in the tube, as soon as it is placed in the bottle containing it. The operator should then put his thumb on the end of the tube,

while he lifts it from the bottle, and thus retains in the tube a sufficient quantity of the fluid, which he can then allow to drop on the surface of the skin as he pleases. I may here mention, that I have found tubes of this kind extremely useful, for the purpose of dropping fluids into the eye.

In the first and last modes of applying the Moxa, no after treatment is required, farther than the temporary application of the stimulants just mentioned. When eschars are produced by the application of the Moxa, the part should be kept covered by a piece of adhesive plaister, until the eschars are separated. This separation will generally take place in the course of eight or ten days, but sometimes not for double this period; and it is remarkable, that the Moxa acts more favourably in those cases, in which the eschar is thrown off very slowly, than in those in which its separation takes place with rapidity: the reason of this will appear hereafter. The superficial ulcers, which result from the separation of the eschar, as also the excoriation, which follows the vesication produced by the second mode of applying the Moxa, should be washed once or twice a day, until they are healed, with a solution of the nitrate of silver or sulphate of copper, and covered by adhesive plaister. The ulcers left by the separation of the eschars will always be found much less deep than might have been expected, but greater in their superficial extent than would be supposed from the appearance of the eschar; and they will, therefore, in general, require some days for their cicatrization.

SECTION V.

OF THE MEANS WHICH MAY BE EMPLOYED AS ADJUVANTS TO MOXA.

This "is all that is requisite for a cure ; which is true, as I have experimentally proved, by using no other, in cases which have succeeded perfectly : but this fact being established, there is no reason why every assistant means should not be applied at the same time, in order to expedite : such as bark, cold-bathing, frictions, &c."

POTT'S WORKS BY EARL, Vol. iii. p. 250.

Having discussed, in the preceding sections, the mode of action of Moxa, the manner in which it should be applied, and the general principles which should regulate us in selecting and preparing cases for its application,—I propose to consider now, whether any additional means should be used along with it, of what kind they should be, and upon what grounds they ought to be employed.

It does not require any argument to prove that, if we have means which can co-operate with the action of Moxa, they should be employed in conjunction with it. Nor does the utility, or even the necessity, of collateral remedies, militate in the slightest degree against the independent and powerful therapeutic influence of Moxa. What is the agent employed in the practice of medicine or surgery, in respect to which, we do not act upon the same principle ? Indeed, the means used by us in the

treatment of disease are, almost uniformly, remarkable for their complexity ; and probably this has been one of the reasons of the slow advancement of our knowledge of remedies ; for, where many are used in conjunction, it is impossible to distinguish the effects of one from those of another ; and until our knowledge of a remedy is so far advanced, as to enable us to select with judgment those means which are suited to co-operate, it should be employed alone ; otherwise, we shall be in danger of uniting it with remedies which may be not only useless, but injurious, by opposing its action. But, when the mode of operation of a remedy has been fully and carefully ascertained, and its utility proved by its insulated and repeated application, “ there is no reason why every assistant means should not be applied at the same time, in order to expedite.”

I have not to speak in this place of the application of those means, which ought to be employed for the removal of the remote causes, that may have produced those states of the vascular system upon which the disease depends ; my object is confined to the consideration of the remedies, which may tend to co-operate with Moxa in restoring the vessels of the part to a natural state : it being understood that when the Moxa is indicated, these vessels are weakened, and probably distended. The reader will not, however, suppose, from my silence respecting the causes of these diseases, that I consider attention to them a subordinate object. On the contrary, without a constant regard to the removal of their cause, no system of treatment can be effectual ; and this is true, whether the disease arises from a morbid state of any other organ in the system, or from the undue operation of any of the numerous physical or moral agents, which possess the power of influencing our body, and thereby of exciting disease.

As the essential nature of those diseases, which are suited to the action of the Moxa, consists in an atony, and often in an overloaded state of the absorbents and capillaries, the remedies, capable of being employed as adjutants to the Moxa, may be considered under two divisions: 1st, Those which act by directly increasing the tone of the vessels, and consequently the rapidity of absorption and capillary circulation;—and 2dly, Those whose beneficial influence depends on their emptying the overloaded or distended capillaries. The former are denominated tonics, and the latter evacuants. The tonics are either general or partial in their mode of action, while the evacuants are either absolute or relative. The signification of these terms will be explained in the sequel.

It has been correctly remarked by those who have treated of the action of remedies, that tonics may differ very much in their mode of operation. Thus venesection, purgation, or whatever will, under certain conditions of the body, occasion a salutary change in its vital powers, may produce a corresponding alteration in the tension of its fibres, and consequently fall under the denomination of a tonic remedy: but independently of the state of the body, there would seem to be certain substances which act as specific stimuli on the living fibre, and are, in certain cases, by their stimulant operation, capable of increasing its tone or motive power. It is of the latter class of tonics that I wish more particularly to speak; and the reader is always to hold in recollection that I employ the word tonic to designate all stimulants which are capable of exciting actions, favourable to the acquisition of power. Their action is not, however, confined to their operation on the sanguinary capillaries, for they materially excite the lymphatics and function of absorption; and the reasoning and observations made at page 44, &c. respecting

the relations of these two orders of vessels, are fully applicable on the present occasion.

In general, such tonics as are derived from the mineral kingdom should be preferred to vegetable tonics: at least in the more chronic forms of the disease under consideration. The only vegetable tonics, upon which I would place any reliance, are cinchona, guaiacum, and turpentine; and the mineral tonics, from which I have obtained most benefit, are mercury, iron, arsenic, silver, and copper. Upon what the superiority of mineral tonics depends, I cannot take upon me to say—but it is probably connected with the more permanent nature of their action; and as there is reason for supposing that they are absorbed with more certainty into the general circulation than vegetable tonics, it is also probable they may act directly on the part affected.

I am sorry that I do not feel myself capable of giving more precise directions respecting the selection of these remedies: it is likely, when our knowledge of their mode of operation is better understood, as also the exact nature of the diseased actions to which they are applicable, that peculiar forms of disease shall be found to require peculiar tonic remedies; but I am afraid our knowledge on the subject is at present so imperfect, that we must rest satisfied with the general principle; and, in its detailed application, be content, for the present, with the suggestions of empiricism. At least, I have not had, on many occasions, any better rule to guide me, than that of having recourse to one remedy, when another failed.

The proper regulation of the dose of tonic remedies is a most important point in their administration. We should reflect, that the state of the system, which renders their employment necessary, also renders it less capable of being influenced by stimulants; and that we may,

therefore, give with propriety, in such cases, larger doses of tonics, than their action on the body in the state of health would appear to justify. Indeed, it is probable, that we may extend to all remedies of this class, the observation which Cullen has made on one of them, viz. : “ that the good effects of the preparations of iron have been often missed, by their being given into too small doses ;” an observation which has been fully supported, and remarkably illustrated by Mr. Hutchinson and others, in the success obtained by them from very large doses of this tonic in that form of neuralgia, denominated *Tic Douloureux*. At the same time, it is to be remembered, that, as the action of all tonics is stimulant, their dose must not be excessive, otherwise they will produce a degree of excitement, which must be necessarily followed by a corresponding exhaustion or collapse ; and they may thus aggravate, rather than alleviate, the state of weakness, for the removal of which they have been administered. To prove this fact, I need only adduce mercury, which, administered, in what are called alterative doses, forms one of the most universal and most powerful tonics we enjoy ; but if its employment be carried to excess, there is no remedy capable of causing a greater degree of exhaustion and permanent weakness.

Nor is the length of time, during which tonics ought to be employed, a matter of less serious consideration than their dose. Therefore, while we bear in mind, that as they are stimulants, if their administration be continued too long, it may at length diminish the power of the system, we should remember, that the want of tone which exists, renders the fibre so much less sensible to their action, that some considerable time may elapse before their full influence can be obtained. When it has been necessary to persevere in their employment for a con-

siderable period, I have found great advantage from alternating their administration with one another; and, when the system is with difficulty acted on by them, their combination with stimuli of more transient action, particularly with opium, stramonium, lactucarium, hyoscyamus, and the carbonate of ammonia, will afford important assistance, not only by rendering the body more susceptible of their influence, but also in preventing any inconvenience from the administration of the large doses, which may be on such occasions required.

It is highly probable, that a well-conducted set of experiments, to ascertain the exact nature of the direct or local action of tonics on the animal texture, would afford us much assistance in arriving at correct views of the mode of operation of these important remedies upon the general system. Such experiments should not, however, be conducted, as Dr. Crawford did, on the dead fibre,* but on living texture; for we must ever bear in recollection, "*In vivum corpus agunt medicamenta.*" I am even of opinion, that the facts which have been ascertained by experiment in our own days, respecting the influence of stimulants on the capillary vessels, although these experiments were made with a very different object, are highly calculated to assist us in such investigations. Nor can I avoid remarking here the correspondence, which will be found, between the rules just laid down for the employment of tonics, and the conclusions which may be deduced from these experiments.

Although these experiments may not be considered by some readers as affording any support to the particular rules respecting general tonics, it must be admitted, that they may

* AN EXPERIMENTAL ENQUIRY into the EFFECTS of TONICS, &c. by the late ADAIR CRAWFORD, M.D. F.R.S. LONDON, 1816.

be capable of illustrating the influence of local remedies of this class. Therefore, as an introduction to the remarks which I am about to make on the latter agents, I shall relate in this place a few axioms, which appear to result from the experiments alluded to.

1. If an agent, which, on its first application, causes contraction of the capillaries and an acceleration of the motion of the blood in them, be applied without intermission for a lengthened period, it will cause a dilatation and retardation of the circulation: hence the impropriety of persisting in the employment of tonic remedies for an inordinate period.*

2. If a fresh stimulus be applied to capillaries, which have become dilated from continued excitement and consequent exhaustion, a contraction will ensue, and their natural state will be restored: hence, the advantages of alternating the use of tonics with each other, when their long continued influence is required.†

3. A stimulus, which is capable of producing contraction of the capillaries, will, if applied in a very concentrated state, immediately cause dilatation of these vessels and consequent retardation of their circulation, without any perceptible previous contraction: hence, the impropriety of administering tonics in too large doses.‡

4. When the capillaries are morbidly dilated, and their circulation retarded, they cannot be excited to contraction, until the stimulus has been a long time applied; and they will bear it for a long period, without its producing dilatation: hence, the necessity of taking care that the doses of tonic remedies are sufficient, and continued for a sufficient length of time.§

* HASTINGS, loc. cit. pp. 31, 79, 82. † Ib. pp. 83, 92. ‡ Ib. p. 91. § Ib. p. 90, and A. P. W. PHILIP, loc. cit. p. 15.

As I have already observed, local tonics, like general tonics, are, essentially, stimulants; and produce their influence on the functions of capillary circulation and absorption, by causing a degree of increased action favourable to the acquisition of power. The local tonics, which may be made to co-operate with the Moxa are divisible into those that act directly on the immediate seat of disease, and those that influence it by their action on the skin over the diseased part. To the former belong acupuncture, and probably galvanism, and to the latter the alternate aspersion of hot and cold water, terebrinthinate and ammoniacal liniments, and some other cutaneous stimulants.

The acupuncture certainly acts upon the principle of a stimulant; but, whether this be owing to its mechanical influence, or to the disengagement of a minute portion of galvanic fluid, I cannot pretend to say. If it be the fact, (as, if my memory does not fail me, I have read asserted lately in some foreign journal,) that needles made of platina have not the power of exciting, when introduced, any galvanic influence, and yet that they afford the same relief as those which are said to have this power, we must conclude that the benefit afforded by acupuncture, in such instances, arises from mechanical agency; at least we do not know any other way in which it can act. The acupuncture is a remedy that is gaining reputation on the continent; and, although it is not without its inconveniencies and rather transitory in its effects, yet if employed as an adjuvant, in the intervals of the application of Moxa, it will not be without its utility. The effect which it sometimes has in removing, for a time, all pain and uneasiness is very remarkable.

I have already spoken of a mode, which I have adopted, of combining the operation of acupuncture and Moxa,

by using a needle to convey the caloric, disengaged by the Moxa, to the more deep seated parts. The acupuncture may also be used in conjunction with galvanism; and this will often be found the most useful mode of applying the latter agent. The stimulating or tonic power of galvanism is so transient in its influence, that the number of cases in which it will be really efficacious, are very few: it may, however, occasionally deserve to be employed, and in paralytic affections, rather than in painful diseases.

The identity of galvanism and nervous influence, and the consequent power of the former to supply the place of the latter, has been of late years much insisted on by Dr. W. Philip. But although it should be admitted that there is a perfect identity between the galvanic fluid and nervous influence, yet, if galvanism acts merely by supplying a fluid, which serves the same purpose as the nervous influence, it is quite evident that its beneficial effects must be only transient, or just so long as it is applied: for the moment its application ceases, its effects must cease. Exactly in the same way, the influence of the brain over every part must cease, as soon as this organ ceases to act; or as soon as its power of influencing other parts is interrupted by the division or destruction of the nerves, which were the means of propagating its action. From these considerations it is, therefore, evident, that if galvanism has any permanently good effect, it must be by its action on that function, from whence the nervous influence is ultimately derived; and this function most certainly is that one by which the structure of the brain and nerves is formed and supported; or in other words, the function of nutrition.

It has been satisfactorily ascertained, that, of the various agents by means of which we can excite the capil-

lary vessels to increased contraction, there are none more effectual than turpentine, ammonia, ice, or hot and cold water. Turpentine and ammonia are frequently applied to the skin in the form of liniment for the relief of painful diseases. But the effects which they produce, when thus used, are the very opposite of a stimulating tonic. It has been observed above, that the long continued application of a stimulus to the capillaries, will excite dilatation of these vessels. From the manner in which ammoniacal and terebrinthinate liniments are applied, they must necessarily cause this effect; and, in consequence, there must result an accumulation of blood in the cutaneous capillaries, and a revulsion from the deep seated parts. I do not say these effects will not be useful, for I know the reverse to be the case; but it is right to be aware of the difference of results, which may be obtained from these remedies, according to the manner in which they are applied. If it be our wish to use them as tonics, or to cause the primary effects of a stimulant, their application must be transient; they must be applied in as concentrated a state as possible, and their influence promoted by alternating their application with one another.

The observations, which I have just made on the employment of turpentine and ammonia, are fully applicable to the remedy afforded by the aspersion of hot or cold water. The first effect of the impression of these agents will be to excite contraction of the capillaries, and consequent tonic action; but, if their application be continued beyond a certain time, relaxation ensues. When hot or cold water are used as stimulants, the former should be applied as warm as the person can bear, and when the latter is used, the coldest water should be preferred. I have, on many occasions, derived the most striking advantages from the alternate aspersion of hot and cold water,

in cases in which there was every reason to suppose the existence of a great degree of atony of the capillaries.— When the practitioner has not any means within his reach of propelling the water with force on the part affected, he may substitute for aspersion the simple alternate application of two large sponges—one being made as hot as possible and the other as cold. From this simple remedy he will, in many cases, obtain for his patient very unexpected relief.

A knowledge of the fact that an alternation of stimulants will produce an action more decidedly tonic, than the continuance of the same stimulant, induced me to try some years ago the influence of causing a shower of cold water to fall on the patient, immediately on his coming from the fumigating apparatus, and while his skin was in a state of great excitement. I knew from the practices, which are adopted in the north of Europe, that the trial could be made with safety. Highly beneficial results followed the experiment; and ever since, whenever I can overcome the prejudice of the patient, I have recourse to this system of conduct. When it is employed, I direct that the patient shall not remain more than half a minute under the shower, and that his skin shall be well dried and rubbed for some time after. The entire of this process is remarkably refreshing to a patient on coming from the hot apparatus. It is always followed by a most comfortable glow of heat, and I have no doubt of its assisting to preserve the patient from catching cold after the operation of fumigation.

The success which followed the preceding plan, led me to another, from which there has resulted advantages not less striking. It consists in applying cold to the affected part, while the general surface is still exposed to heat. This may be done, if it is a fluid bath which is employed,

by pumping a shower of water on the part; or if it be a fumigation which is used, the cold may be applied by means of a bladder filled with ice or iced water. The value of this mode of proceeding has been frequently proved by its utility in some of the most obstinate cases of painful affections, which have occurred to me. When employed, it must be persevered in with steadiness and frequently repeated.

It has been asserted above, that those remedies which operate by emptying the loaded and distended capillaries, are either absolute or relative in their mode of action.—Thus, a preternatural accumulation of fluids in any part of the body may be removed by equalizing the circulation, without causing any discharge from the system; and in such a case there is a relative diminution of blood in the part. Or, the local accumulation may be removed by causing a discharge from the part, in which the accumulation is seated, or from some of the remote parts of the body; and in this case the diminution of fluids is positive.

The removal of preternatural accumulations of blood, by discharge from the part or system, is more particularly applicable to the treatment of that stage of which I have spoken, when considering the mode of preparing the patient for the employment of Moxa. I do not, therefore, intend to say any thing further of such remedies in this place. Let me, however, take this opportunity of apprizing the reader, that whatever may be the form of remedy employed, or the state or stage of disease in which it is used, we must uniformly hold in view the just regulation of all the secretions and excretions;—and we must also bear in mind that it is no unusual thing for the state of increased action to supervene, while the patient is under the employment of tonic remedies; and, in such an event, the mode of diminishing the contents of the vessels

which are the seat of disease, upon the principle of positive evacuation, must be employed.

When we diminish the quantity of blood in one part, by causing an increased quantity in another part, the therapeutic operation is denominated revulsion, or counter-irritation : an operation which is founded on the well-known relations existing between the different parts of the vascular system. These relations are, in fact, such, that we every day observe, both in the healthy and morbid states of the system, partial accumulations of blood in one part, accompanied by a corresponding diminution in another. Thus, in the act of digestion, the stomach receives an unusual supply of blood ; in deep and long-continued reflection, the brain becomes the seat of an analogous accumulation ; in the act of blushing, in the state of excitement of the organs of generation, and during utero-gestation, we observe a similar principle in operation. All these are examples of accumulations of blood compatible with the healthy state of the system. In disease, similar accumulations are much more frequent.—Thus the cessation of a morbid action in one part is frequently followed or accompanied by the origin of a preternatural action in another part, which phenomena, when they occur, afford examples of what are called the metastasis and conversion of disease. On other occasions, accumulations take place from the morbid actions of one part, without producing any other alteration in the remainder of the system, except a sensible diminution of blood in other parts, marked by a reduction of temperature. Thus we have coldness of the feet in diseases of the head; &c. &c.

Were we possessed of any means, by which we could, with certainty and at our pleasure, call into action, or controul this quality of the vascular system, it is proba-

ble that our power over disease would be infinitely greater than it is. For when we are able to act on disease by counter-irritation, we obtain from it great assistance in controlling morbid action; but, unfortunately, our capabilities in this respect are often very limited.

From the universal sympathy which the skin holds with all other parts, from the little inconvenience which arises from an accumulation of blood in it, and from the facility with which we can act upon it by counter-irritants, it is, generally speaking, the organ to which we determine the blood, when we call to our assistance the operation of revulsion.

In applying agents to the skin, for the purpose of exciting in it an accumulation of blood, we sometimes act on the entire surface, sometimes on the part which is over the disease, and sometimes on a part which, though at a distance from the diseased organ, is supposed to have a remarkable sympathy with it. Among those remedies, which act on the general surface, we may class hot baths, fumigations, &c.; both of which may be simple or medicated; that is, the hot bath may be composed of water only, and the fumigation of heated air only, or these fluids may be impregnated with various stimulating agents.

Of those which act on a limited portion of the skin, we may mention the *vapour douche*, dry cupping, the long-continued application of irritating embrocations, liniments, &c.; to which may be added blisters, scarifications, leeches, and those means which excite artificial eruptions, although all the latter act both as evacuants and counter-irritants.

It may, on a first view, appear extraordinary that I should speak of blisters as a remedy in those diseases which require the employment of Moxa, after having ob-

served, in many parts of the preceding pages, that mischief would almost inevitably arise if the operator used Moxa upon the principle of a blister. The reader will, therefore, please to reflect, that the application of blisters in cases suited to Moxa, is very different from the application of Moxa in cases suited to blisters ; for it has been proved, in the preceding pages, that the mode of action of Moxa is that of a powerfully stimulating tonic, and that its effects extend far beyond the part to which it is directly applied ; hence, it is quite evident, that if it be used in cases in which there is deep-seated increased action, it will increase the disease by increasing the action.—Whereas, the influence of a blister is almost entirely limited to the skin ; and, by its operation as a counter-irritant, it may relieve deep disease, although the disease for which it is employed, be in a state of increased action. It is also evident, that blisters may be useful in those diseases, in which the capillaries are in a state of distention, by emptying the capillaries, although such blisters will not increase the tone of the weakened vessels.

The immediate relief, which we obtain from the entire class of counter-irritants, must have always struck those who have witnessed their employment in diseases to which they were suited. The temporary nature of this relief, when the diseased vessels are in a state of atony, is not less remarkable. In fact, this is exactly what might be expected from their mode of action. They, for a time, diminish the contents of the distended vessels ; relief consequently arises. But as soon as the cause of revulsion is removed, the fluids again return to the weakened vessels. To render such remedies efficient, their employment must be frequently repeated, or even uninterruptedly continued, and accompanied by means calculated to restore the weakened capillaries to a state of healthy tone.

I almost uniformly combine with the Moxa the employment of general counter-irritants, or of such counter-irritants as act on the general surface; and, of this class of remedies, I much prefer fumigations of heated air combined with stimulating vapours, such as sulphureous acid gas, ammonia, chlorine, &c. This class of remedies has always appeared to me to act with extreme benefit; and from close observation, I have been induced to suppose, that they have a double mode of action, which renders them particularly suited to the atonic stage of many diseases. Their heat, and the stimulating substances with which the air is impregnated, evidently produce a remarkable determination to the skin, which is, in fact, sometimes rendered as red as scarlet cloth; but, I am convinced, that in conjunction with this, they cause a contraction of the capillaries of the surface, a consequent increase of tone, which is propagated more or less to the rest of the system; and, therefore, to the vessels which are the seat of disease. In short these remedies act so beneficially, that, in many cases, they would be alone sufficient to produce a cure. My reasons in support of the opinion which I gave six years ago, respecting sulphur fumigation, are, therefore, greatly strengthened: but the reader, who may have perused my publication on that subject, will observe that farther experience has led me to more general and more scientific views.

Those operations, which are capable of emptying the diseased vessels by pressure, however this pressure may be effected, constitute an important mode of relief in all diseases connected with a debilitated and distended state of the capillaries. The means of employing this pressure are bandage, friction, and percussion. It is probable that the two first operations may act as stimulants, and be, therefore, inadmissible in the state of increased action, or active inflammation: an observation which did not

escape the attention of the elegant and accurate Celsus, "Nam et capitis longos dolores ipsius frictio levat; *non in impetu tamen doloris.*" &c.*

There are few things better ascertained in pathology and physiology, than the utility of pressure in disease, and the necessity of its constant agency in health. The syncope which so frequently follows the sudden abstraction of blood, the sinking sensations which result after the operation of tapping or parturition, death which has taken place, according to the observation of Sir G. Blane, after the copious evacuation of urine and fæces, are all to be explained upon the principle of internal pressure being suddenly removed; while Saussure and others have made us acquainted with the inconveniences which follow from the diminution of atmospheric pressure.

On the other hand, the advantages which have been derived in the practice of our art, from the proper application of artificial pressure, are generally known and fully appreciated. It is thus, that we explain the success of Mr. Baynton's plan of treating ulcers, Sir G. Blane's in chronic hydrocephalus, Dr. Balfour's in rheumatism, and Mr. Grosvenor's in stiff joints; and, upon the same principle, we may account for the advantage obtained from the practice of girding the loins on occasions of great muscular exertion, and the removal or diminution of the sensation of hunger by pressure on the stomach, as is remarkably exemplified in Captain Inglefield's narrative of his escape from the Centaur of 74 guns, which foundered in the Atlantic Ocean, in the year 1782.

From the foregoing facts, it is extremely probable, that pressure may exercise a beneficial influence on parts, which are in a state of atony, independently of its effects in

* "A. C. CELSUS de MEDICINA &c. ex recensione L. TARGAE, EDINBURGI 1809." Lib. ii. Sec. xiv. p. 77.

expelling the contents of the capillaries ; and even independantly of the power which it may give these vessels to resist the entrance of a fresh incursion of blood. Its mode of operation, in such cases, I cannot pretend to explain. We know that a degree of permanent tension, among organic fibres, is absolutely necessary for the continuance of their vital actions. For, as has been well remarked by Sir G. Blane, there is not any character of life more expressive of its nature than the universal state of tension of every fibre ; nor is there any more certain token of the extinction of life than the absence of all tension. No muscle, whether voluntary or involuntary, can exert its contractility, unless the fibres are previously in such a state, that, if divided, they would shrink by their resiliency, leaving an interval between their cut extremities. The same may be said of the vascular system in all its ramifications, in order to give play to their contraction in grasping and propelling their contained fluids. If that state of parts, upon which this tension depends, does not exist in its natural degree, and that tension can be communicated by such mechanical contrivances as bandages, adhesive straps, &c. we can have no difficulty in conceiving the utility of such contrivances ; for, by producing even a temporary increase in the state of tension, they may put the parts in a better condition for recovering their inherent or natural tone ; just as tonic remedies, both local and general, improve the tone of the system, or of parts, by exciting actions favourable to the increase of power.

The utility of friction in the treatment of disease is not a modern discovery ; for, ever since the days of Hippocrates, it has been a practice more or less generally adopted, to relieve parts in a state of debility by thus me-

chanically assisting the too languid circulation of the fluids. The moderns would, indeed, appear to have unaccountably neglected this important remedy; and the great advantages which have been derived from its employment, in the practice of Mr. Grosvenor of Oxford, as well as in my own practice, leave no doubt in my mind, that it would afford a most important means of cure in a vast number of diseases. The history of this very remedy would, in fact, add another example to those already detailed, of the vicissitudes which our most important therapeutic agents undergo from the caprice of fashion. To some the practice of Mr. Grosvenor may appear to possess the merit of originality; but let such refer to our neglected classics, and it will be found that it only affords a striking example in proof of the adage, that "there is nothing new under the sun;" that the existing practices of the human race are only revivals of ancient customs.

The following quotation from Celsus is introduced, because it not only proves the truth of the foregoing assertions, but because it contains in a few words, and these the words of Hippocrates, almost all that is known on the subject, even at the present day.

"Oportet autem neque recentiores viros in iis fraudare, quæ vel reppererunt, vel recte secuti sunt; et tamen ea, quæ apud antiquiores aliquos posita sunt, auctoribus suis reddere. Neque dubitari potest, quin latius, quidem, et dilucidius, ubi et quomodo frictione utendum esset, Asclepiades præceperit; nihil tamen repperit, quod non a vetustissimo auctore Hippocrate paucis verbis comprehensum sit: qui dixit, frictione, si vehemens sit, durari corpus; si lenis, molliri; si multa, minui; si modica, impleri. Sequitur ergo, ut tum utendum sit, cum aut adstringendum corpus sit, quod hebes est; aut molliendum, quod

induruit ; aut digerendum in eo, quod copia nocet ; aut alendum id, quod tenue et infirmum est."*

Nor is this art one easily acquired by nurses of ordinary intelligence. If at any time I have occasion to increase the number of those rubbers, whom I keep in constant employment, I find that with all the attention I can give to directions, my wishes are never carried into execution with accuracy. In fact, although it is a very mechanical process, it requires months of practice to render a person perfect in the art of employing it.

I am convinced that the principal cause of the neglect of friction among the moderns arises from the difficulty of obtaining persons properly experienced in the art. The imperfect manner in which the operation is commonly performed struck me forcibly some years ago, when on a visit at Oxford, during the life of Mr. Grosvenor, I had an opportunity of observing the adroitness with which his rubbers used friction, and the steadiness with which they continued it for hours without any interruption. It was this visit which induced me to educate some poor persons in the art, and to keep them in my constant employment as rubbers. And here I would beg leave to observe, that it is really much to be desired that the profession would give encouragement to the general establishment of nurse-tenders, who would devote their attention to acquiring a proper knowledge of the art of friction ; and its extensive utility in many obstinate diseases, would soon render it a most popular remedy.

The bare hand, or the hand covered with a woollen glove is the best instrument for friction. A small quantity of hair powder, or fine flour, should be interposed, between the skin of the patient and the hand of the rub-

* CÆLUSUS. loc. cit. Lib. II. sec. xiv. p. 76.

ber, to prevent any chafing. Very great advantage will be obtained by causing a gentle stream of vapour to play upon the part while friction is applied. We have a very convenient instrument for this purpose at the Skin Infirmary. In the want of this, we may make a substitute of a common tea-kettle, by attaching to its pipe a flexible tube, made by coiling wire into the form of a suspender spring, and covering this with close canvass, the inner surface of this having been previously soaped.

The various mechanical operations, which have been denominated massing, shampooing, thumbing, kneading, &c. &c. may be included under the head of percussion; for each and all of them essentially consist in the application of a circumscribed, momentary, or transient pressure, frequently repeated; and they all produce their beneficial effects, by compressing the vessels in such a manner as to increase the rapidity of their circulation. They may, however, as I have said above, act also by a stimulating agency.

Although these practices are here in almost total disuse, there are none more generally employed in other countries. Nor are there any from which more remarkable effects have been obtained, both in preserving health and in removing disease. In Finland, Russia, Turkey, Egypt, India, China, and in the South Sea Islands, the practice is universal; but the manner in which it is employed is very different in these different countries. In some, a process of flagellation is used: the instrument employed being a small bundle of minute twigs, rendered soft by immersion in hot water, or by exposure to vapour or steam. Galen speaks in the highest commendation of this practice; and we are informed by Suetonius, that by it, Antonius Musa, physician to Augustus, cured that Emperor of a sciatica, which had resisted all other

means. Pouteau recommended, that percussion should be applied by allowing a stream of minute pebbles or coarse sand, previously made hot, to fall from a height on the part affected; and Dr. Gower, of the Middlesex Hospital of London, has recommended for the same purpose an instrument of the form of a hammer: the striking end of which is made of cork. He has denominated this instrument a pulsator.

The hand is, however, the best and most commonly employed means for performing these various processes. It may be used in different ways. As by gently pressing or kneading with the thumbs, or with the ends of the fingers, or with the closed hand, or by causing the hand or points of the fingers to be propelled with an impulse upon the part, or lastly, by grasping alternately, with either hand, the limb affected—one hand being placed at either side, in such a way, that they may meet and surround the limb. But, whatever may be the way in which the operation is performed, it should be conjoined, whenever there is the means, with the exposure of the patient, during the process, to the influence of heated air or vapour. This is my uniform practice at the Skin Institution, and the highly beneficial results fully justify the encomiums which different authors have lavished on this remedy.

If practice be necessary to enable an attendant to perform friction with art, it is still more necessary in shampooing. But the nurse-tender, who has been instructed and who has acquired a knowledge of friction, soon becomes an expert shampooer. Indeed, shampooing and friction may and should, almost always be combined. The following is the manner in which these processes are performed in conjunction at the Skin Institution.

The patient, previously undressed, enters the shampooing apartment, already heated to the temperature of about 110 F^t.* He then reposes on a cane sofa, and a small quantity of aqueous vapour impregnated by passing through some aromatic or odoriferous herbs is allowed to enter the apartment. This vapour gradually diffuses itself and distributes a delightful fragrance. The patient remains in this situation until the surface of the body becomes gently moist. The shampooer now enters, and first submits the entire body of the patient to that degree of friction which may be necessary to disengage all branny or furfuraceous deposit from the surface of the skin. The process of shampooing is then commenced, and the shampooer, by gently grasping, pressing, and kneading, with the fingers, thumb, or entire hand, variously modified and employed from the extreme parts to the trunk in the line of direction of absorption and venous circulation, continues the process for a longer or shorter time, according to the nature of the disease and the feelings of the patient; the percussion being occasionally interrupted for the purpose of extending, in a gentle manner, such parts as are in a state of rigidity. The whole process is then terminated by gently cleansing and drying the entire surface with a soft towel. The patient then withdraws into an adjoining apartment, the temperature of which is not inferior, when he enters it, to that of the shampooing room; but after he has reclined for some time on a bed or sofa, or after he has got himself dressed, the heat of this second room is gradually lowered to that of the external

* For a description of the SHAMPOOING APARTMENTS at the DUBLIN SKIN INFIRMARY, see my ACCOUNT of the APPARATUS, which has been constructed at this INSTITUTION for the TREATMENT of RHEUMATIC and CUTANEOUS DISEASES; illustrated by many plates—in 4to.

atmosphere by a particular contrivance ; but, in so slow a manner, that no vicissitude whatever is experienced by the feelings of the patient.

The beneficial consequences, which always result from the process of shampooing, when properly employed, and in appropriate cases, are most striking. I have often known patients sink into a slumber and enjoy several hours of delightful tranquillity after the operation, who had scarcely slept for weeks before ; and I have known patients, who were scarcely able to move a limb on entering the apartment, and who were consequently carried into it, able to walk out erect and with steadiness. In short, I have, on many occasions, seen almost realized the picture drawn by the popular author of the "Letters on Egypt." "Perfectly massed," says he, "and as it were regenerated, you experience an universal comfort. The blood circulates with freedom, and you feel as if disengaged from an enormous weight, together with a suppleness and lightness to which you have hitherto been a stranger. A lively sentiment of existence diffuses itself to the very extremity of the body, while consciousness is lost in the most delicious sensations ; and the soul, sympathizing with delight, enjoys the most agreeable reflections. If life be nothing but the succession of our ideas, the rapidity with which they then recur, the vigour with which the mind runs over their extended chain, would induce a belief, that, in the two hours of that delicious calm that succeeds the operation, one has lived a number of years."

Again, on the other hand, I have found a single operation produce feverish symptoms, and a restless night, when employed by patients contrary to my wishes, and because they had observed others, whose cases appeared to resemble theirs, obtain from it the greatest advantage. The principles, which have been laid down in the pre-

ceding pages, fully explain these opposite results. In fact, if those remedies which are calculated to excite tone be employed in the state of increased action, they will uniformly increase the disease and aggravate every symptom; while the same cases will be benefited by opposite measures. Again, if those remedies which are suited to diminish action be persisted in beyond a proper time, they will render the diseases for which they are administered much more malignant in their nature, and more difficult of cure. To use the words of Mr. John Bell, on an analogous occasion, "That disease, which, with but a little indulgence, a very little encouragement of fomentations, poultices, bleeding, and low diet, would end in white swelling of the knee, may be stopped even by so simple a matter as a well-rolled bandage."*

Having now investigated the principles which should regulate us in the treatment of the diseases that form the subject of these pages, it might be useful to consider the means which should be employed to prevent their return, when they have been once removed. This is a subject upon which patients frequently form very erroneous judgments, and are often most unreasonable in their expectations. They appear, in general, to suppose that the cure of a disease had not been effected, if that disease, or rather the same form of disease, should, by any circumstance, recur at any future period. But such patients should consider, that, although some diseases have the power of rendering the system insensible to those causes by which they have been in the first instance produced, the reverse is the case in respect to the greater number of maladies to which we are subject; and the pre-existence of a disease is, frequently, so far from becoming a cause of

* Principles of Surgery, Vol. I. p. 127.

protection, that it is found to constitute a source of disposition to future attacks, when the causes of the disease are again applied. It is the province of the Physician or Surgeon to remove disease, but it is the business of the patient so to conduct his mode of life as to prevent, as far as possible, the application of those causes, which may tend to re-excite it.

A full consideration of the various attentions, which are required for the prevention of disease, would occupy more space than could be possibly devoted to it in this publication. Nor is this necessary, for the reader may easily collect, from the exposition of principles which has been made in the preceding pages, all that I can say for the regulation of his conduct in this respect. In fact, our endeavours must all tend to the great object of preserving and improving the tone of the system, or of the parts more particularly diseased. But this improvement of tone will not be produced, as is too generally supposed, by that full living from which it is vulgarly thought, that all health and strength necessarily spring. The ingesta must be ever regulated by the wants of the system, and these will be always proportioned to the muscular exertion of the individual, and to the activity of the various excretions. The quantity and quality of food suited to each individual, must be always adjusted by the wants of his own system, and not according to what agrees or disagrees with another. He must also have a rule of conduct, peculiar to himself, for the regulation of his bodily and mental exertion; both of which should be exactly proportioned to his powers, and such as to give full exercise without fatigue. The final object of all our functions is to bestow on us the faculty of performing those corporeal and mental efforts which characterize our species; and there is here, as on all other occasions, such a

connexion between the means and the ends, that the exertions of the one afford the most certain mode of exciting the required state of the other. These exertions, to use the language of Mr. Hunter, may be said to afford a stimulus of necessity. If due attention be paid to the various practices which these principles inculcate, there will be little use for the employment of any other measures, unless we except such as are necessary to protect the system from the influence of those physical agents, the removal of which is not within our controul: such are the vicissitudes of the atmosphere; and in no other diseases is the powerful influence of these vicissitudes more distinctly observable, than in those of which I am treating. In fact, patients who are subject to these diseases ascertain, by the state of their feelings, all the changes of the atmosphere, with as much accuracy, as those physical instruments which are constructed for this express purpose.

There can scarcely exist a doubt that atmospherical vicissitudes act on more of our organs than on the skin; but their influence on this organ is of the most importance to us, as it is probably the skin which feels this influence with greatest force, and as it is the organ which we can protect from that influence with the greatest facility.—The importance of a healthy state of the skin has not been sufficiently insisted on. And we are the more surprised at this, as physiologists are well aware of the very important function which it performs, as an organ of excretion. The most superficial practitioner does not neglect either the urinary discharge, or the discharge from the bowels; but the excretions from the skin should equally obtain his attention. Of this we shall feel convinced, if we reflect, that it is the duty of this organ to discharge, at the lowest calculation, by *insensible perspi-*

ration, not less than thirty ounces of excrementitious matter in the course of twenty-four hours. An assertion which could scarcely be accredited, if its truth had not been ascertained by numerous experimental inquiries, which leave not the smallest shadow of doubt upon the subject. It is well known that the Italian Physician Sanctorius led the way in this field of inquiry, to which he devoted the greater part of his life; and it is also known that his experiments have been followed up by Dodart, Keil, Rye, Gorter, Linings, Robinson, Home, Stark, Abernethy, Hales, Haller, and Lavoisier and Seguin. The general principles which regulated the experimental investigations of these inquirers, upon this subject, were much alike. They all proceeded upon the plan of Sanctorius, of weighing the body, adding the aliment received, deducting the discharges, and placing the loss which it had sustained to the account of the cutaneous transpiration; but it was only the latter of these authors who accurately distinguished the loss from the lungs from that by the skin.

Were I to enter on a full investigation of the various considerations connected with this important function, a large volume would not contain the valuable facts which should be brought forward; and feeling the importance of the subject with all its force, it is one upon which I dare not enter at present. I shall, therefore, conclude by simply observing, that I know of no means so highly calculated to preserve the cutaneous organ in full vigour, and consequently to protect the system from those diseases which result from its derangement, equal to the constant and daily ablution of the entire surface, by means of either a shower-bath or sponging—and, in either case, the water should be used of the temperature of about 65 F°. Whether it be the bath or sponging that be chosen, the gen-

eral surfaces should be afterwards well rubbed with a coarse towel. If sponging be preferred, vinegar will often, particularly in weakly subjects, answer our purpose better than water.

In the management of chronic disease, it is often extremely difficult to obtain sufficient perseverance on the part of our patients to do justice to our plan of treatment ; and when, by whatever system we have adopted, the disease has been much alleviated, we can seldom succeed in securing a continuance of proper attention, until the morbid action has been completely subdued. We are, therefore, called on to inform such patients that, in proportion as the disease has been long in existence, in the same proportion, *ceteris paribus*, must its removal be tedious ; and if they have not sufficient steadiness to persevere in that system, which is necessary for their own welfare, when they are honestly put in possession of their case, whatever may occur, they alone will be accountable for the results, and our professional character can never suffer.

SECTION VI.

CASES OF PAINFUL, PARALYTIC AND SPASMODIC DISEASES OF THE NERVES AND MUSCLES, TO ILLUSTRATE THE UTILITY OF MOXA.

“ The main business of Natural Philosophy is to argue from Phenomena,
without feigning hypotheses.”

NEWTON.

THE diseases, of which the following cases afford examples, are all essentially characterized by lesion of the functions of motion and sensation. The nerves and muscles are the organs by which these functions are performed; and as the connexion which exists between these organs is so intimate, that even in the present advanced state of physiology, we are not always able to allot to each its respective share of influence in the performance of certain functions,—it follows that these diseases may be considered as forming a natural group.

We need not wonder that the public should confound under the same name, many very dissimilar painful affections, when it is recollected, that until about the middle of the seventeenth century, when the work of Ballonius de Rheumatismo et Pleuritide dorsali was published, gout and rheumatism were not distinguished from each

other in nosological writings; and that it is only within the last few years that a class of affections, seated in the nerves, and possessed of very peculiar characters, have been distinguished from rheumatism. For this improvement in nosology we are indebted to Chaussier, one of the Professors of the School of Medicine of Paris, who has given to this class of affections the very appropriate name of neuralgia—*νευραλγια*, from *νεῦρον*, nerve, and *αλγος*, pain.

The pain which attends on this disease, is often intolerable. It frequently darts with the rapidity of lightning along the trunk and branches of the affected nerve: language is sometimes unable to express the dreadful anguish which it excites. Were it continued it could not be borne. The mere exhaustion which it inevitably induces would soon extinguish every vital action, and thereby plunge into the abyss of oblivion the bodily consciousness of the sufferer, who would then freely, indeed, resign an existence of torture for the soothing tranquillity of death. Fortunately, it is intermittent; and as all our sensations are relative, the heavenly quiet which succeeds the storm, is almost sufficient to recompense the sufferer. Thus, we may say in the language of Dr. Paley, "Pain itself is not without its *alleviation*. It has the power of shedding a satisfaction over intervals of ease, which few enjoyments exceed." But, although existence may be prolonged by the relief which such intervals of ease afford, the frequent returns of pain gradually undermine and exhaust the powers of the system, and soon convert its victim, however robust and athletic, into a deformed shadow.

The intermissions of pain are frequently attended by peculiar sensations in the course of the affected nerves. There is sometimes a feeling of heat, sometimes of cold.

At times, there will be a painful feeling of numbness, or a sensation of pricking, or as if cold water were running in the course of the limb; and the muscles, which are supplied by the affected nerves, are, at intervals, thrown into a state of cramp and spasm, which often produces great distress.

The recurrence of the paroxysm of pain will frequently observe regular periods; and when this is the case, the evening or the night generally the time chosen for its attack. But, on other occasions, there is no regularity observed, and the sufferer cannot promise to himself the slightest security at any fixed time during the whole diurnal revolution. Perhaps he becomes a prey to his direful enemy when he feels himself in greatest security, and at a moment which he has vainly allotted to some anxious or pleasurable avocation.

I have said that the pain generally darts from the trunk to the branches of the nerve affected; but, on some occasions, it will follow a reverse direction, and extend from the extreme ramifications to the trunk. At other times, it will start up in some portion of the course of the nerve, and, limiting itself to one spot, will not extend in either direction. In the interval of the pain there is neither redness, heat, swelling, nor tension of the affected parts; and although the paroxysm will frequently arise without any warning, it is often preceded by a turgescence of the vascular system of the seat of disease, with general fulness and increase of heat, and great sensibility to the slightest pressure in the course of the nerve. These symptoms gradually increase until the decline of the paroxysm, when they not unfrequently terminate in an increased discharge from some of the neighbouring exhalants. Thus, a paroxysm of pain in the supra-orbital nerve is frequently followed by a flow of tears, and a

similar state of the superior or inferior maxillary nerve is succeeded by a discharge from the nose or mouth. Are not such phenomena strongly corroborative of the vascular origin of these diseases?

It is probable that there are no nerves in the body, which may not be affected by neuralgia; but it certainly attacks those of the face and inferior extremities more frequently than those of any other part. The exposure of the former to atmospheric vicissitudes, and the depending situation of the latter, afford satisfactory explanation of the cause of this preference, and an additional proof of the vascular origin of neuralgia; for, it is evident, that both of the foregoing predisposing causes must act by influencing the circulation. It is the opinion of several of the Continental writers that many thoracic and abdominal affections, such as angina, cardialgia, gastrodynia, nervous asthma, &c. &c. are owing to a similar disease of the pulmonic and cardiac plexus of nerves.—However this may be, the following species of neuralgia have been correctly ascertained, and frequently witnessed by me:—

1st. Frontal neuralgia: pain commencing in the eyebrow, and from this extending to the forehead, the eyelid, the internal angle of the eye, and sometimes to the entire side of the face.

2d. Infraorbital neuralgia: pain commencing under the eye, and from this extending to the cheek, to the upper lip, the side of the nose, and to the inferior eyelid.

3d. Maxillary neuralgia: pain commencing at the mental hole, and from this extending to the chin, to the lips, to the temple, to the teeth, and to the tongue: the pain sometimes commences in the teeth, and from this extends to the other parts of the face.

4th. Cervical neuralgia : pain in the neck, extending to the sterno-cleido-mastoid muscle, to the back and inside of the ear, and to the back of the head, to the gums, and to the tongue ; producing in the last-mentioned organ a sensation as if it were scalded.

5th. Intercostal neuralgia : pain commencing in the back, and extending, in the direction of the intercostal nerves, round the side, to the front of the chest.

6th. Thoracic neuralgia : pain commencing in some part of the breast, and from thence extending in a radiating manner along the ribs, and down the inside of the arm ; following the course of the thoracic nerves, and the cutaneous nerve of Wrisberg.

7th. Abdominal neuralgia : pain in the loins, and from this part extending round the side of the abdomen to the linea alba ; and sometimes commencing in the side of the belly, and from this extending towards the loins.

8th. Ilio-scrotal neuralgia : pain, which commencing in the loins and following the course of the spermatic cord, extends to the scrotum and testicle, causing a retraction of this organ.

9th. Femoral neuralgia or sciatica, (the sciatic gout of some authors, and the *ischias nervosa postica* of Cotunni) : pain commencing in the hip, and sometimes in the loins, and from thence often extending to the groin and scrotum, to the posterior surface of the thigh, and to the outer surface of the leg, the ankle, and the upper part of the foot, and toes ; frequently attended by numbness of the foot.

10th. Crural neuralgia, (*ischias nervosa antica* of Cotunni) : pain which, commencing in the groin, extends along the front of the thigh, the inner side of the leg, to the internal ankle, and upper part of the foot.

11th. Plantar neuralgia : pain which extends from the

heel, along the sole of the foot, in the direction of the plantar nerves.

12th. Anterior tibial neuralgia : pain commencing below the patella or joint of the knee, and from this extending to the upper part of the foot.

13th. Cubito-digital, or ulnar neuralgia : pain sometimes commencing in the neck, and from this extending along the inside of the arm ; but more frequently beginning at the elbow, and following the direction of the ulnar nerve, it extends along the inside of the fore arm, to the same side and back of the hand ; and in general terminates in numbness of the little and ring fingers.

14th. Neuralgia of the external musculo—cutaneous nerve : pain commencing in the side of the neck, or at the inferior angle of the scapula ; and, from this, extending along the outer part of the arm and fore-arm to the index and middle fingers, where it ends by causing numbness.

14th. Anomalous neuralgia, which is the name given by Chaussier to a variety of nervous pains, which start in different parts of the trunk and limbs.

I have never seen a well marked case of neuralgia of the fascial nerve, and I have some doubts of the correctness of those cases which have been recorded as such. Opportunities seldom occur of examining the state of the nerves affected by neuralgia. But the observations which have been made on this subject will go to prove, (one or two excepted,) that these complaints are always connected with structural derangement. Cotunni observed, in sciatica, inflammation of the envelope and of the substance of the nerve, infiltration of its tissue, and disorganization of the nervous pulp. Siebold, in a case of inter-costal neuralgia, found the nerve red and emaciated. Civillo, in a similar instance, found the nerve thickened and hardened. Bichat, in a

case of sciatica, observed a varicose dilatation of the veins. Van-de-keer witnessed a remarkable vascular injection of the neurileme or covering of the nerve, and the medullary matter, of a grey colour. Martinet found the nerve red, the neurileme injected, and infiltrated with a limpid, purulent, or bloody serosity; and an enlargement of the proper texture of the nerves, which was sometimes hardened and sometimes softened. Yet, we are informed by Desault and Rousset, that they have not been able to detect any alteration of structure in some cases, which have occurred to them. But, as I have already shewn, this negative evidence can have no weight, as long as our means of detecting morbid structure are so imperfect. As far as my own observations go, they fully support the opinion, that the structure of the nerves is, in such cases, more or less altered, although the nature of this alteration is subject to considerable variety. I have found their vessels uniformly enlarged, their texture sometimes hardened and sometimes softened—and their size occasionally diminished, but more frequently enlarged.

Thus it appears, that the class of diseases denominated neuralgia, are peculiarly suited, by all their characters, to that system of treatment, which has been considered in the preceding pages; and, although the object of this publication requires, that the cases which I shall now bring forward be selected with the view of illustrating the influence of Moxa in their treatment, the reader will not suppose, after what has been said, that this remedy is either necessary in every case, or that those cases, in which it must be employed, should not receive the benefit of other means of cure at the same time.

CASE I.

Infirmity for Rheumatic and Cutaneous Diseases, Moore-st.
July 14, 1826.

Marianne Clinch, from 29, Great Britain-street, aged 42, of a tall figure, pale complexion, the mother of twelve children,

Complains of violent pain in the right side of the loins, extending into the corresponding hip, along the back of the thigh, and outside of the leg to the same angle. The pain frequently seizes her in some one of the parts mentioned, without commencing in the loins. When in bed, she is unable to lie on the affected parts, or permit the most trifling pressure on them. The skin also is so sore to the touch, that she cannot bear to have it handled. Heat affords some relief to the pain, and she is, therefore, careful to have the limb rolled at all times in flannel. Damp weather produces an increase of her distress. When she walks she is very lame; the spine is concave on the affected side, the opposite shoulder elevated, and the diseased hip projects in an unnatural degree:

Emaciation, cough, night-sweats, menstruation very scanty and irregular, during the last nine months. Pulse small, frequent and feeble.

Has had the painful affection, more or less, for six years; but, during the entire of the last year, it has become almost intolerable. Has left no means of cure within her reach untried; and never obtained from any thing which she has used more than very temporary relief.

Discharged cured of all pain on the 25th of August: her pulmonic disease appeared also to have got a check. Four applications of the Moxa had been made, viz.: one

below the ancle on the 25th of July, one to the posterior and outer part of the leg on the 29th ;—one behind the right trochanter on the third of August, and one to the posterior surface of the thigh on the 16th. She used no other remedies from the application of the first Moxa to her discharge. From the 17th of July to the 25th, she was under the influence of the extract of aconite, which she took to the extent of six grains three times a-day, but without the slightest relief. The general debility of her system prevented me using any evacuants either topical or general, as a preparation for the Moxa ; which, from the painful state of the parts upon pressure, I would under other circumstances have been induced to do.

CASE II.

Charitable Infirmary, Jervis-street,
August 16, 1826.

Patrick Lamb, aged 42, from St. Doulough, a labourer, in the employment of Mr. Rutherfoord of Rutland-square,

Complains of acute pain in the inferior angle of the right scapula, shooting from that point, along the latissimus dorsi, to the middle of the posterior edge of the deltoid, and thence along the posterior and external part of the arm and fore-arm to the wrist, where it terminates by numbness and coldness of sensation in the posterior surface of the index and middle fingers. He also complains of stiffness and pain in the right side of his neck, along the edge of the trapezoid muscle. Whenever he allows the limb to hang, the pain becomes excruciating in the

line of direction above described ; and when he attempts to place it in a sling, a feeling of numbness is excited through the whole limb, which is quite intolerable : he is therefore obliged to keep his arm elevated and supported by resting the palm of his hand on the top of his head. He is unable to lie on the affected arm at night.

These complaints have been produced by a fall on the shoulder, some weeks ago. He has used leeches, blisters, liniments, pumping, and friction, without relief.

Discharged cured on the 11th of September. The Moxa was applied nine times in the line of direction of the pain. The first was placed at the inferior angle of the scapula, and the last on the back of the wrist. The dates of their application were the 16th, 17th, 19th, 21st, 26th, and 30th of August, and on the 4th, 7th, and 8th of September. No other means whatever were used, except the acupuncture needles, which were twice introduced ; viz. on the 24th and 28th of August.

When he was discharged, none of the eschars had separated ; nor was there the most trifling inflammation in the skin surrounding any one of them. He remains well ; all the eschars have separated in scales, and the ulcers are healed.—October 10.

CASE III.

Infirmary for Rheumatic and Cutaneous Diseases, Moore-st.
August 18, 1826.

Margaret Savage, aged 40, a widow, residing No. 7, Temple-court, Temple-street, in the habit of earning her livelihood by supplying newspapers to the inhabitants of Mountjoy-square, and the adjoining streets,

Has been subject for several years to an asthmatic cough, which was always particularly severe during the winter. It ceased entirely last spring; but was succeeded by pain in the right knee, shooting violently down the front of the leg, to the upper part of the foot and ends of the toes. This pain is most severe at night. The entire limb is weak and tremulous. The veins become turgid, and the leg swells, and grows extremely stiff and hot, about four o'clock daily. She is rendered unable to earn her livelihood; has not been out of her bed for several weeks, except for the purpose of applying at hospitals and dispensaries for assistance. Has obtained no relief whatever, from a great variety of remedies which have been used by her.

She was discharged cured on the 27th of September—no means having been employed, except two Moxas; one of which was placed immediately over the patella, and the other on the front of the middle of the leg. She was free from pain long before her discharge; but the ulcers produced by the Moxa were very tedious in healing, and very irritable for an unusually long time.

CASE IV.

Infirmary for Rheumatic and Cutaneous Diseases, Moore-st.
August 22, 1826.

Thomas Darcy, aged 60, residing in a cellar in Strand-street, a labourer in the employment of Mr. W. Dobbin, builder,

Complains of pain, extremely severe, in the region of the right trochanter; shooting, on one hand, into the lower part of the abdomen, a little way above the middle of the left groin, and, on the other hand, down the thigh to the middle of the leg; numbness of the thigh and leg.

The pain is not constant; yet there is not any fixed period at which it is more or less painful: it is, in general, as severe during the day as during the night. If he be at work when seized by it, he becomes extremely lame, is obliged to sit down, and a cold moisture quickly covers his skin. When he rests after work, his limb is most painfully stiff.

He dates the origin of these complaints six years back: they have, however, latterly become more severe. To use his own language, he has tried "every cure that ever was heard of."

Discharged cured on the 20th September. The Moxa was applied in this case three times; viz. on the 23d and 30th of August, to the back of the thigh, and behind the trochanter; and on the 10th of September to the outer part of his leg.

CASE V.

Merchant's Quay, August 23, 1826.

Mr. A. G——, aged 30—Complains of violent pain in the region of the right trochanter, in the same groin, and in the outer portion of the thigh. From these situations it extends downwards to the outer and middle portion of the leg; or, from his description, it commences in his leg, and extends upwards. He is very lame, and the spine inclined off the affected side, with an elevation of the shoulder of that side. The pain is constant, and extremely severe at night, rendering him almost unable to turn in his bed. It is increased by exercise. Had numbness in his foot, when first attacked by the complaint, but has none now. Has a pallid, sickly, countenance; yet, he says, his general health is extremely good.

Has laboured under these complaints for eight months.

Has tried a great many remedies, and in vain. Had a fever some weeks ago, when the pain left him; and upon his recovery from the fever, he congratulated himself that his pains had been removed; but, as soon as he went about his business, they returned with increased violence.

This gentleman was cured by the application of two Moxas—one to the hip, and one to the groin. He was under my care six weeks. The first fortnight was employed in reducing a degree of increased action, which appeared to exist. For this purpose rest, cupping, and the tepid bath, were used. When the first Moxa was applied, the pain was extremely severe, but intermittent; seldom attacking him, except at night.

CASE VI.

Charitable Infirmary, Jervis-street.
August 28, 1826.

Martin Byrne, aged 26, residing at No. 7, Off-lane, a labourer in the employment of Mr. Taffe, of the Pipe Water Establishment,

Complains of severe pain in the left hip, behind the great trochanter, extending upwards to the sacro-iliac symphysis and loins, and downwards, along the back of the thigh and outside of the leg, to the ankle and external part of the dorsum of the foot. There is frequently a distressing and creeping sensation of numbness in the entire limb; and sometimes a sensation as if cold water was running in the line of direction, in which the pain occurs. There are violent cramps, occasionally, in the calves of his legs at night; weakness of his loins, with a sense of stiffness and confinement in his hips and lower part of his back. If he attempts to extend the limb fully, while he is in the recumbent posture, an acute pain

seizes his hip, and the outer part of his leg; and the same pain is produced by the act of standing. The pains are extremely severe on the nights of those days on which he has exercised.

His figure is very much deformed. During progression, he throws the weight of the body off the affected limb on the opposite thigh; yet, owing to a second lateral curvature in the spine, the right shoulder is much higher than the left; there is a hollow on the left side of the trunk between the ribs and pelvis; the abdomen projects to the front and right side, and there is a remarkable fulness in the superior and posterior part of the left hip. When placed on his back, there does not appear to be any difference in the length of the two limbs; and he lies in such a way as to throw one shoulder more forward than the other.

Has been labouring under this painful affection for some months; was not deformed prior to the occurrence of the pain; attributes his complaint to exposure to cold last winter; has been at several hospitals, and has used blisters, liniments, and a variety of other remedies without relief.

On the 28th of August, a Moxa was applied behind the left trochanter; and on the 30th, a second to the sacro-iliac symphysis of the same side; on the 2d of September, a third was applied on the loins; a fourth on the day after to the outer part of the leg, and on the 7th, a fifth was placed on the front of the ankle. On the 11th of September, he was free from all pain; but on account of the weakness of his loins, and my wish to ascertain how far his figure would be recovered after the removal of the pain, he was allowed to remain in hospital until the 26th of October, when he was discharged free from all complaint, and vastly improved in his figure

and mode of walking. From the date of his admission to the application of the last Moxa, no other remedies whatever were used. Between the employment of the last Moxa and the date of his discharge, he got two sulphur fumigations, which afforded much relief to the weakened and confined feelings in his loins and hips. During the progress of the separation of the eschars, a painful swelling of the glands of the left groin took place, which lasted for several days, but they did not suppurate.

CASE VII.

Infirmary for Rheumatic and Cutaneous Diseases, Moore-street.

August 31, 1826.

John Nowlan, aged 45, a watchman—complains of extremely severe pain in the right hip, extending in the course of the sciatic nerve down the thigh to the outside of the middle of the leg, in which situation it is, sometimes, most distressing; great weakness in the loins, referred to the level of the superior edge of the crest of the ilium; painful numbness in the limb, if exposed to any cold wind. These pains are most severe when he sits or lies, which obliges him to spend his time, as much as possible, limping about. When in bed he cannot lie on the affected side.

He is very lame; his figure much distorted; the left shoulder raised, the right depressed, the spine concave on the right side, and the corresponding hip unnaturally prominent.

Has been subject for several years to pain and weakness of his loins, particularly on exposure to cold. Within the last four months this pain and weakness has become almost constant, more severe, and conjoined with the painful affection of the hip and leg. This increase of his complaint he attributes to his having

been for some time without a watch-box, which obliged him to rest during the night, by sitting on damp and cold steps at doors, which he says "caused the pain to pass down from his loins to his hip, and from that to his leg." His general health is good, although he looks pale and languid.

Discharged cured on the 25th of October. This case was very obstinate, which is explained by the consideration, that, during treatment, he continued to perform the duty of a watchman, by which he was necessarily exposed to the night air. The Moxa was applied nine times; viz. twice to the loins, twice to the hip, three times to the thigh, and twice to the leg. Its action was assisted by sulphur fumigation, during the latter part of the treatment.

CASE VIII.

Sackville-street, August 3, 1826.

Mrs. C——, aged 30, mother of several children—Complains of acute pain shooting in all directions through the right side of her face and head. The pain darts with great violence and rapidity. It comes on at intervals; is in general most severe at night; appears sometimes to begin in her teeth—none of which are, however, diseased on the affected side. Each paroxysm subsides with a copious discharge of a watery fluid from her nose. The hearing of both ears is greatly diminished, and she is distressed by a constant noise in them. She has had the painful affection of the side of her face for several months, and the deafness for a number of years. She attributes the loss of hearing partly to her having bathed when warm, and partly to cold caught after parturition. Has, frequently, flushings of her face, with head-ache; is regular in her menstrual discharge; her stomach dyspeptic, with occasional colic.

She has used a variety of remedies for the painful affection of the face—never received any benefit from any of the means used, except from leeches, which she was herself induced to apply, from having obtained great ease on the occasion of a spontaneous discharge of blood, which came from her nose.

I applied a very minute moxa, twice a week, in the course of the branches of the superior and inferior maxillary nerves; and in the interval I took away some blood by leeches, and employed daily the hot bath with the application of cold water to the head. This treatment, assisted by a few simple remedies for the relief of her stomach and the regulation of her bowels, succeeded, in the course of six weeks, in removing all symptoms of pain, and greatly diminished the noise in her ears. She continues quite well in all respects, her hearing excepted.

CASE IX.

Charitable Infirmary, Jervis-street.
August 24, 1826.

The following case of disease of the hip joint, accompanied by most severe pain in the course of the nerves of the thigh and leg, is introduced for the purpose of demonstrating that the neuralgia which attends this affection, is capable of receiving benefit from the Moxa.

William Hollywood, aged 15, from Cloughrim, in the neighbourhood of Swords, son to a carter in the employment of Mrs. Shaw,

Complains of most severe pain in the outside of the right thigh and leg, commencing in the groin and about the trochanter, and extending downwards as far as the outer angle. The pain is almost intolerable at night, uniformly preventing him from obtaining any sleep until morning.

The patients of the ward inform me, that his nights are spent sitting on the edge of the bed, pouring forth frequent screams and lamentations, which he says he is unable to restrain. His thigh and leg are much wasted. He also complains of weakness in the lower part of the dorsal vertebræ, in which situation there is a convexity about three inches in length. There is scarcely any pain upon pressing about the hip joint, or on the convexity in his back. He lies with great difficulty on his back, and can scarcely bring his trunk and lower limbs into a straight extended position. The affected limb is nearly three inches longer than the opposite, with a corresponding inclination of the pelvis. He is unable to walk without crutches, and even with their assistance he cannot allow more than the toes of the right foot to touch the ground. When standing, as erect as possible, his right shoulder is considerably higher than the left, the left side of the trunk concave, and a convexity on the right. The pelvis, at the right side, is not only depressed several inches, but is also thrown forward along with the diseased limb. Has had a pain in his back for twelve months, and the hip has been affected four months. The former he attributes to lifting heavy loads, but cannot assign any cause for the latter. Has had a caustic issue behind the trochanter, and allowed it to heal, because he did not find it followed by any alleviation of the symptoms.

From the date of his admission to the 15th of September, nine Moxas were applied in different situations, according to the seat of pain at the time, viz. : three to the hip, one to the groin, one to the back, two to the outside of the thigh, one to the outside of the knee, and one to the leg. All, except those which were applied to the hip, were allowed to cause only the most superficial eschar. He is now (25th September) free from all pain, rests

extremely well at night, walks much better, more straight, and without crutches. What the final result of this case may be, it is impossible yet to say. It was most remarkable how readily this boy, who is naturally timid, not only submitted with cheerfulness to the frequent employment of the Moxa, but even intreated, from the conviction he had of the great relief which it afforded him, that it should be applied oftener than I thought adviseable. If, at any time during the act of application, he made any complaints, they were immediately stopped upon my threatening to remove the Moxa, or not to apply it again. He often declared that he would rather have the Moxa applied many times, than the caustic once.

I have one observation to make on this case and on the preceding cases of sciatica, in explanation of their symptoms. It is known that disease of the hip, like sciatica, has a remarkable effect on the direction of the spine; but the various changes, which take place in this portion of the skeleton at the different stages of these complaints, have not been sufficiently noticed. The first change, which occurs, is an inclination of the spine to the side opposite the affected limb: there is thus produced an elevation of the shoulder of the morbid side. But, in a short time, the trunk is found to incline, by the formation of a second lateral curve in the opposite direction; and then the shoulder of the affected side becomes depressed. In this state, the figure continues for a long time; but, as the disease advances, and particularly if a young person is the subject of it, a third curve takes place, by which the trunk is again thrown off the diseased member; so that the spine, when viewed laterally, is at last of the form of S: with the shoulder of the affected side elevated. It is not necessary to inform the reader, that these various changes occur in the line of direction of the spine, for the com-

bined purposes of removing the superincumbent weight off the diseased limb, and, at the same time, preserving the equilibrium of the body. The preceding case of Hollywood affords an example of the third degree of this curve; the case of Nowlan of the second degree; and that of Mr. A. G. of the first degree.

The disease, of which the cases that I am now about to lay before the reader afford examples, may be denominated Myalgia, from *μῦών*, muscle, and *αλγος*, pain. These cases are generally classed among rheumatic diseases; but they will be found to differ from rheumatism, as much as those affections, which Professor Chaussier has classed under Neuralgia. One of the most striking characters of rheumatism consists in the disposition which it has to move from one part of the body to another; but, in myalgia, the pain is fixed to one muscle or set of muscles; and, although it may remit, when it recurs, it attacks the same parts. This is also the case in neuralgia; the pain remains confined to the trunk of one nerve, or to its branches, or to those branches which are immediately connected with them. It is highly important to bear these considerations in recollection, for, while few cases of pure rheumatism will receive more than temporary benefit from the Moxa, chronic myalgia will immediately yield to its influence.

There are probably no muscles of the body which may not be attacked by myalgia; but it certainly seizes, in preference, those which are most employed. It hence occurs, very frequently, in the loins, in the extensors of the thigh, in the hip, and in the calf of the leg. The deltoid, and the supinator and pronator muscles of the fore-arm, are those which most frequently suffer, when the disease attacks the superior extremity.

I have had several opportunities of examining, after death, the state of the muscles which had been affected by myalgia; and I have found great uniformity in their appearances. The firmness of the muscular fibre is always diminished; it is easily torn; its color is less deep than that of the other muscles of the body, and there is diffused among its fibres a sero-gelatinous fluid; while the adipose substance is completely absorbed, and the capillary vessels, which run among the fibres, are varicose. These appearances fully explain the partial paralysis, which is a frequent sequela of long-continued myalgia.

CASE X.

Infirmary for Rheumatic and Cutaneous Diseases, Moore-st.
August 2, 1826.

James Seagraff, aged 67, Aughrim-street, a labourer.

Complains of violent pain on each side of the knee, shooting upwards along the extensor muscles of the thigh. The pain is more acute at the inner side of the joint, and along the vastus internus, than on the outside of the limb. It is also most severe when he attempts to walk, or make any exertion. He is obliged to keep the limb in a state of constant extension; and is, consequently, very lame when he attempts to walk.

Has had this affection for two years, and it has latterly become so severe that he has not been able to work.—Blisters and a variety of liniments have been used by him.

One application of the Moxa, on the inferior extremity of each of the vasti muscles, completely removed all pain, and restored the limb, in ten days, to perfect use,

CASE XI.

Infirmity for Rheumatic and Cutaneous Diseases, Moore-st.

August 12, 1826.

James Carty, aged 32, a sawyer, in the employment of Mr. Fleming, of Cook-street,

Complains of pain, violently acute, in the substance of the calf of the right leg, extending downwards a few inches from the part principally affected; most severe about two o'clock each day, and particularly distressing on those days on which he works. About the middle of the day, the limb swells, becomes hot, its veins grow turgid, and if he has a garter on the leg, he is obliged to remove it; he is very lame; has been labouring under this pain for twelve months; it has become so severe latterly as almost to deprive him of the power of earning his bread; cannot attribute it to any cause; has frequently blistered the part affected, and has used a variety of liniments without relief.

By the application of a single Moxa, applied over the seat of disease, and allowed to burn down, the combustion being aided by the blow-pipe, the pain was immediately removed, and has not returned.

CASE XII.

Infirmity for Rheumatic and Cutaneous Diseases, Moore-st.

August 30, 1826.

Michael Doyle, aged 50, a labourer in the employment of Mr. Bryan, of Cole's-lane market,

Complains of weakness in the loins, with acute pain on

the outer side of the lumbar mass of muscles. He is unable to stoop: the very attempt produces such acute pain, as to cause a spasmodic interruption to his breathing. The pain is more troublesome by day than by night, but comes on in irregular paroxysms, and is always increased by exercise. He has been labouring under this complaint, more or less, for six years; but, latterly, it has become so severe that he is unable to attend to business. He has used all common remedies. His general health is good.

The application of a single Moxa to the lumbar mass of muscles, and one introduction of a needle, removed all pain, and in one week completely restored the parts affected.

CASE XIII.

Dominick street, September 1, 1826.

Mr. T. C. aged 29—complains of very severe pain in the left hip, extending through the loins to the false ribs of the same side. He is very lame, unable to stoop, or to walk, except at a very slow pace. The pain is more severe during the night than day; at night, his lower limbs are remarkably cold. Has had these complaints for seven months, and has employed a great many remedies.

On the 24th of September, all his pains were removed. Three Moxas having been applied, viz.: one to the side of the false ribs on the 1st of September; one to the hip on the 8th of September; and a third to the same part on the 14th. The needle was introduced once into the hip, between the 2d and 14th of September.

CASE XIV.

Infirmary for Rheumatic and Cutaneous Diseases, Moore-st.
September 4, 1826.

John Dowdal, aged 65, Dorset-street, a baker, in the employment of Mrs. Tipper of King-street,

Complains of weakness and great pain in the lumbar region, preceded by pain in the left sacro-iliac symphysis. Has been labouring under this painful affection for many weeks, and has been able to obtain only temporary relief from blisters, liniments, &c. &c.

A single Moxa, applied to the left side of the spine, removed all his complaints, in the course of ten days.

CASE XV.

Abbey-street, August 18, 1826.

Mr. J——S——, aged 25, complains of acute pain commencing at the head of the vastus externus muscle of the right thigh, and extending from this situation, in the line of direction of the fibres of the muscle, to the front and sides of the knee. The pain is much encreased by exercise, which causes, at the same time, such weakness in the limb that he is unable to raise it, without placing his hand under his leg. A sensation of weakness, and as if cold water was running down the limb, frequently seizes the parts affected. Has most ease when the limb is placed in an extended position. He has laboured under this painful affection for several weeks; and, latterly, he has been rendered unable to attend to business by it. He has used a variety of remedies without relief.

Two applications of the Moxa on the outside of the thigh restored the limb to a healthy state in twenty days.

CASE XVI.

Charitable Infirmary, Jervis-street,
August 24, 1826.

William Flinn, aged 26, from Santry, a labourer in the employment of Mrs. Turbot, and the subject of hip-joint disease in infancy,

Complains of acute pain in the anterior and outer part of the left thigh, commencing about the groin and trochanter, and extending to the knee. It is so intolerably severe at night, that he declares he has not known sleep for several weeks, except during the day; that his nights are spent out of bed, not being able to obtain relief, except by remaining in the cold air, his body bent forward, his hands leaning on the bed, and his leg in state of a forced extension. During the day he is uniformly found with his hands in the act of grasping the thigh below the groin, for the purpose of affording relief.

He was discharged cured on the 20th September, no other remedy having been used except one Moxa, which was applied a little way below the groin, having been preceded by cupping. This remarkable and rapid cure remains permanent.

There are few diseases which exhibit in their origin, symptoms, and immediate causes, greater varieties than paralysis. It may consist in a loss of sensibility of the part affected, while its mobility remains; or the mobility may cease to exist, while the sensibility is unimpaired.

A loss of sensibility is also, sometimes, combined with a state of spasm or convulsion; while a want of the power of motion is frequently united with a state of painful sensibility. The disorganization, from which these different forms of paralysis arise, is seated in either the nervous or muscular tissue, or in both; and while, in some cases, the textures affected are completely changed and disorganized, there is much reason to suppose that, in a vast number of cases, there exists merely an altered state of the circulation of the parts affected. We have abundant proof that a turgid state of the vessels of either muscular or nervous tissue, is quite sufficient to cause a lesion or suspension of the functions of the fibres so oppressed; and that an opposite state, or a deficient supply of blood, will produce the same symptoms, is clearly demonstrated by the phenomena of syncope; and also by the influence which a ligature on the abdominal aorta of a dog, has to cause an immediate paralysis of the hinder limbs of that animal: an experiment made by Haller, and since repeated by Sir A. Cooper, and others. The state of turgescence, or the opposite state, may be the consequence of previous inflammatory disease, or of mechanical injury; or they may be the result of some undefined irritation acting on the part, either directly or indirectly.

It is, probably, only those forms of paralysis, which depend upon the state of circulation of the texture affected, that are susceptible of receiving benefit from the resources of medicine: for, I am much afraid, that when the structure of the nervous or muscular substance is, as it were, torn up, whether by injury or disease, we must leave the reparation to the efforts of nature; and be content with watching her actions, and with protecting them against those causes of disturbances, which might otherwise arise. At the same time, as there are no symptoms, by which we

can, with certainty, distinguish those cases of paralysis, that spring from the latter cause, from those which are owing to the former; and, as the judicious employment of such measures as are suited to remove that form of paralysis, which depends on vascular derangement, can do no possible harm, whatever may be the state of the texture affected, there is no reason why we should not always have recourse to a trial of such measures, rather than leave the patient to lead his life in helpless misery, without making any attempt for his relief.

There is a particular form of partial paralysis, which attacks children, and which has very frequently occurred to my observation. As I believe it has not been sufficiently attended to, I shall take this opportunity of saying a few words respecting it, before I enter on a detail of the cases, which I have to bring forward, in illustration of the beneficial influence of Moxa in paralytic diseases. I have been frequently consulted by mothers respecting their children, with a request that I would particularly examine the arm or some other limb of the child, because, as they said, the nurse who had the care of the child, had allowed it to fall; that the limb had been in consequence much hurt; and that it was not known whether it was broken or not. When we take hold of the limb, on these occasions, for the purpose of examining the little patient, the child shrinks from our touch, the limb often feels hot, and its power of motion is either diminished or entirely lost. There is in fact every reason, from the state of the limb, to form the opinion, on a first view, that some mechanical injury may have been inflicted. But, if we minutely investigate these cases, we shall find, that the reported injury or fall of the child has only been supposed; and, on many occasions, it will be found that the state of the limb described has been first observed in the

morning, at the time of dressing the child, and that it had been apparently quite well the night before. In short it will, on investigation, appear that the state of the parts affected cannot be attributed to any mechanical injury, and that the disease is a real paralytic affection, not immediately depending on any external cause. Upon close enquiry it will also appear, that the child had been ailing for a number of days; that it had been fretful, sleepy, or heavy; that during its sleep, for some nights, it had started much, and perhaps screamed; and that its appetite and bowels were somewhat out of order.

The seat of the paralysis in these cases, as well as its degree, is subject to much variety: sometimes it attacks an arm, sometimes one or both of the lower limbs, and then it is often mistaken for an injury or disease of the hip or spine. But, whatever may be its seat, when properly understood at first, and promptly treated in a judicious manner, it uniformly yields to medicines directed to improve the state of the digestive organs. But, if the disease be erroneously attributed to an injury, or to disorder of the hip or spine, and its proper source neglected, it becomes riveted in its hold, and extremely difficult to remove. The flesh of the child grows soft—the extremities shrink—and even if their tone be restored, after a steady perseverance for a long time in the use of the measures inculcated by the principles laid down in these pages, they will seldom recover their natural firmness or plumpness, but will almost always remain shrunk and shrivelled, causing more or less permanent deformity during the remainder of life.

CASE XVII.

Infirmary for Rheumatic and Cutaneous Diseases, Moore-st.
August 3, 1826.

Thomas Long, aged 33, a hackney-coach driver, Dorset-street, has come to the hospital on crutches, without which he is unable to stand,

Complains of loss of power of his lower limbs; their sensibility is not much diminished; the limbs are not wasted, but feel rather full, apparently from adipose deposition; he has frequently retention of urine, and occasional incontinence and ischuria; his stools often escape without his knowledge. There is some pain in his limbs at night, with cramps in the calves of his legs; occasional uneasiness in the loins, but there is no unnatural deviation in the direction of the spine, nor pain on pressure on the spinous processes. He has been paralytic for nine months—blisters, issues, cupping, and a variety of other remedies have been used, from which he obtained some transient relief, but no permanent advantage; he attributes his complaint to exposure to cold, during the end of last winter.

After ten days spent in the improvement of his digestive organs, and in cupping the loins, the use of the Moxa was begun. From the 16th of August to the 28th of October, it was applied thirteen times, at different periods, along the loins and sciatic nerves. He is now, October 30, able to walk without the aid of either crutch or stick; and the only symptom, which he has to preserve his complaints in his recollection, is an incapability of placing his feet on the ground with their natural force and

firmness. The employment of daily friction, and the occasional use of the sulphur fumigation applied from the loins downwards, were conjoined with the use of the Moxa.

CASE XVIII.

Infirmery for Rheumatic and Cutaneous Diseases, Moore-st.
August 1, 1826.

Thomas Wilson, aged 43, a sailor, formerly belonging to the coal vessel Mary.

He passes his urine slowly and with difficulty, and is frequently unable to retain his stools; he complains of great pain in the lower part of the loins, and in his hamstrings, particularly at night. The natural feeling of his lower limbs is greatly diminished; when in bed, he can draw them up to him, but cannot turn in the bed without great difficulty; and, in attempting to get out of bed, he is obliged to put his hands under the calves of his legs, and thus assist the extensor muscles; he is unable to stand without support. The temperature of his limbs is natural, and his general health is good.

Three months prior to his application at the Infirmary, he had fallen into the hold of a vessel; his feet came first on the ground and then his bottom; he lay in this situation until the following morning, when he was conveyed to an hospital in town. He reports, that a number of leeches were applied to his loins; that they were repeated; that blisters were used; and his urine drawn off daily for upwards of a month. He also says, that he was benefited at first; but that, for the last month, he had made no progress, and that he had left the hospital

because there was not any thing a-doing for him. He admits that he is worse now, than when he left the hospital.

After a fortnight spent in cupping the loins, and the thighs in the course of the sciatic nerves, and in the daily use of the tepid bath, the Moxa was applied by means of the needle on the 15th of August, and repeated twenty-one times, with the interval, in general, of two days between each application.

He was discharged on the 30th of October, in such a state of recovery, that he had perfect command over both urine and fæces, and could walk without the assistance of either stick or crutch. His gait, however, unsteady, his limbs very easily fatigued, and unable to press his feet with force against the ground. On the 4th of November I saw him in the street, I stopped and asked him how he was, when with his hand, he gave himself a slap on the thigh, exclaiming, "he would soon be as stout a man as in all Ireland."

CASE XIX.

Charitable Infirmary, Jervis-street,
July 21, 1826.

Patrick Tute, aged 42, admitted into the hospital on the 21st of July. The day preceding his admission, on coming down a step-ladder, (some of the steps of which were broken) carrying a large sack of corn on his back—conceiving that he was putting his foot on a step, which would support his weight—the step gave way, and his foot went on to the next; and nearly falling, he made a violent effort to recover himself and to preserve his load. This

occurred almost at the bottom of the ladder, and he retained the sack until he got down. On throwing the sack from his back, he found his loins injured, very painful; and a feeling of sickness and weakness came over him, from which he, however, soon recovered.

When admitted, he had not full power over his limbs, he could walk but badly, and complained of much pain in the loins and hips.—Notwithstanding the application of leeches, and other appropriate measures, the want of power in the limbs encreased for several days; ischuria came on, with involuntary discharge of a copious viscid fluid from the urethra.

On the 1st of August, he had considerable debility of the lower limbs—his step remained very unsteady, and he was unable to place his feet with firmness or precision on the ground—the ischuria and involuntary discharge from the urethra continued, with pain in the loins, following the course of the sciatic nerves. Two Moxas were now applied, one to each hip over the affected nerves. These removed his complaints in a few days, and he was discharged cured on the 14th August.

CASE XX.

Infirmary for Rheumatic and Cutaneous Diseases, Moore-st.

August 10, 1826.

William Carson, aged 36, a labourer, in the habit of working in the Potato-market, May-lane.

He is unable to separate his right arm from his side to a greater extent than four inches—can draw it forwards, when he directs it close to his breast, but cannot move it directly forwards: the motion backwards is the most ex-

tensive. He complains of pain in the top of the shoulder, on motion ; and when he attempts to raise the limb, the pain becomes acute, and moves from the top of the shoulder downwards to below the middle of the deltoid.

This affection was produced by a triangle, used for the support of the scales in weighing potatoes, having fallen on the shoulder, about four weeks before his application. He has been frequently blistered, and has used various liniments.

He was discharged cured on the 25th of August ; the Moxa, preceded by cupping, having been applied over the surface of the deltoid five times.

CASE XXI.

Fishamble-street, August 28, 1826.

Mr. J. K——, aged 54—complains of almost total loss of power in the left shoulder and arm, with frequent pain, affecting sometimes the muscles of the scapula, and sometimes those of the arm, and most frequently and most severely the head of the supinator muscles of the forearm. The pain is most troublesome at night. The muscles of the entire limb quiver or tremble exceedingly when he attempts to move it from the side of the trunk, along which it hangs in a powerless state.

This affection of the arm was produced about two months ago by his falling down stairs, when in a state of intoxication—his arm came against the edge of a door, which was open, at the bottom of the stairs, and the limb swelled very greatly after the accident, with great ecchymosis.

He has used leeches, blisters, fomentations, liniments, pumping, without benefit. The operation of cupping having been performed twice, a Moxa was applied to the middle of the outer part of the arm. Immediately after its application, he exclaimed, "that he was ten thousand pounds better—that he was a new man." The Moxa, repeated twice more, restored full power to the limb; and at the end of a month, from the period at which I first saw him, no symptoms whatever existed to recal the former state of the parts to his recollection.

CASE XXII.

Infirmary for Rheumatic and Cutaneous Diseases, Moore-street,
August 30, 1826.

Michael Kelly, aged 50, Thomas's-lane, coachman, formerly in the employment of Mr. Nearney, job-coach proprietor,

Complains of want of power in the left shoulder and arm, with pain, particularly severe at night. The pain is then so troublesome, that he is obliged to keep the limb raised above the level of his head, to afford himself relief. He can make considerable use of the arm, when acting on any object below him, or while his arm is kept with his hand directed towards the ground. When the pain is severe, it is felt in that part of the arm where the upper third joins the two lower thirds: the limb is wasted.

A Moxa, applied at the insertion of the deltoid, immediately removed all pain, and increased the power of motion. A second applied on the 10th of September, pre-

ceded and followed by friction, and the vapour *douche*, restored the limb to health before the month had expired.

CASE XXIII.

Infirmary for Rheumatic and Cutaneous Diseases, Moore-st.

August 30, 1826.

John Mulherron, aged 47, City-quay, a sawyer, in the employment of Mr. Morton, ship-builder, Ring's-end.

The muscles of his right arm, fore-arm, and hand are much shrunk, particularly those of the fore-arm and hand. The ball of his thumb is perfectly flat, from the shrinking of its muscles; and there are remarkable hollows in the metacarpal spaces on the back of his hand from the same cause. He is unable to grasp any body with his hand, or to press his fingers with force against one another, and he cannot hold a pen between his finger and thumb or write. He is unable to extend fully his fingers; and when he attempts to perform any motion, which requires an effort, he experiences pain in all the muscles of the limb. His power is greatest over any object which is under him, and he is therefore able to go on with his trade. The power of the limb is greatly diminished by cold, and the whole limb trembles much.

He says he got a small bayonet wound about twenty years ago in the inferior and front part of the fore-arm; and he observes that, unless that wound has been the cause of the complaint, he cannot attribute it to any other source: he is evidently much in the habit of using spirituous potations.

Between the date of his admission and the 24th of September, nine Moxas were applied to different parts of the

arm, fore-arm, and hand, accompanied by the occasional employment of the *douche* and friction. At this period he was vastly improved, could grasp any body in his hand, and could write; and the muscles were evidently becoming more plump. He then ceased to attend, and did not re-appear until the 2d of October, when, not being able to assign a satisfactory reason for his absence, and as he had all the appearance of having been drinking much, he was discharged for irregularity. He was not so well, when discharged, as on the 24th of September, when he ceased to attend.

CASE XXIV.

Charitable Infirmary, Jervis-street,
August 26, 1826.

Two patients labouring under paralysis, from pressure on the nerves in their course, applied this morning. One of them was a pedlar, and the paralysis, which affected his arm, was caused by his carrying a load on the end of a stick placed over his shoulder. The other was a labourer, and, in his case, the paralysis was confined to the flexors of the fore-arm, and had been produced by a board falling on the front of the elbow joint. Neither of these patients had any pain.

A Moxa was applied to the shoulder of the pedlar, near the root of the neck; and one to the fore-arm of the labourer, near the elbow. The power of motion was immediately much increased in both cases. These patients did not return to the hospital; but I feel quite certain that this was owing to the one application having produced a restoration of the injured parts.

CASE XXV.

Charitable Infirmary, Jervis-street,
September 4, 1826.

James Rosseter, a delicate child, aged six years, from 5, Mary's-lane,

Has total loss of hearing from having been exposed to cold, after his head had been shaved, which was rendered necessary for the treatment of a wound on the scalp. The child had been in the hospital, and it was after his discharge that the loss of hearing came on.

A small Moxa behind each ear restored his hearing, after blisters had been used in vain.

CASE XXVI.

Infirmary for Rheumatic and Cutaneous Diseases, Moore-st.
September 5, 1826.

Eliza Reed, aged 17, daughter of a silk weaver, Earl-street, Liberty.

The vision of the left eye is so feeble, that she can merely distinguish light from darkness. Her incapability of seeing objects appears to her to arise from innumerable black lines in front of her eye. The eye does not differ in appearance from the other eye, except in the vessels of the conjunctiva and schlerotic being dilated, and very serpentine in their course. The pupil dilates and contracts from the influence of light. Her mother says, that the present state of the eye succeeded an inflammation, which had lasted several weeks.

Four small Moxas were applied in the hollow of the left temple : an interval of seven days being allowed between each. The hot bath was frequently used, and while she was in the bath, cold water was pumped with force against the morbid eye and corresponding side of the head. She was discharged cured on the 14th of October. The *immediate* influence of both the Moxa and the bath was very remarkable. It uniformly happened, even in the early stage of the treatment, that their application was instantly followed by a great improvement in the power of vision, by the removal of the black lines for a time, which were replaced, so long as they remained away, by a cloud. In the course of the treatment, it was found necessary to remove blood from the head, by cupping in the neck, for the relief of a giddiness which she frequently felt; and which, on one occasion, was so severe as to cause her to fall. It was afterwards relieved by a spontaneous hæmorrhage from the nose, which appeared to hasten the restoration of her sight.

CASE XXVII.

Infirmary for Rheumatic and Cutaneous Diseases, Moore-st.
September 2, 1826.

Barney Coyle, aged 54, a labourer from Dunleary,
Complains of incessant noise in both ears, particularly in the right. The noise he compares to the hum of a bee-hive. He cannot distinguish any other sound with the right ear, and the hearing of the left is very imperfect. He attributes the complaint to exposure to wet and cold. Has been labouring under it for twelve months, and is progressively getting worse. Has used blisters and

a variety of other applications to his ears, without benefit.

Two small Moxas applied behind each ear, and the daily use of a hot bath conjoined with the aspersion of cold water on the head while in the bath, removed, in less than a month, the noise from both ears, improved the hearing of the right, and perfectly restored that of the left ear.

If the views which have been taken in the preceding pages of the immediate cause of functional disease, and of the difference between continued and intermittent morbid actions, be founded in nature, it will follow that, of all diseases likely to obtain benefit from the application of Moxa, epileptic or spasmodic affections, when they have become chronic or inveterate, hold the foremost rank. These diseases are, in fact, remarkable for their intermittent character; and, although the brain or spinal marrow, which are their immediate seat, may be, on some occasions, much disorganised; in general, the only derangement of structure of these organs found in epileptics on dissection, is a slight alteration in the diameter of their vessels, with some trifling changes, the consequence of that alteration. Such diseases have, therefore, precisely the character of that class of affections, to which the remedies, whose mode of action has been investigated in the preceding pages, are suited. And had I not already arrived at the limits, which I have placed to the extent of this publication, I could adduce a large collection of epileptic cases in support of this assertion. However, I expect the three following will be sufficient.

CASE XXVIII.

Baggot-street, August 5, 1826.

B. C., Esq. aged 33, of a tall figure, pale complexion, black hair, and grey eyes,

Has been subject to epileptic fits for several years. At first, they recurred only once every three months; but, during the last year, a week seldom elapses without an attack. The fit, most commonly occurs about the time of his going to sleep. It is uniformly preceded by a sensation of giddiness or swimming, with a noise in his ears; and if he happens to be out of bed at the time, his sight is much affected: all objects are seen confused, and the flame of a candle appears as if it formed the centre of a large star. On the morning succeeding a fit, his intellects are impaired, his head aches, and a general tremulous state of the entire body continues until the following day.

He attributes the original attack of this disease to dissipation; but latterly he has led a very temperate life. His general health is good, with the exception of a slight dyspepsia.

Twenty-one applications of the Moxa were made in this case, between the 6th of August and 20th of October, round the junction of the neck with the occiput, and along the cervical vertebræ. On several occasions the deep eschar was produced, and the ulcers formed by their separation, were allowed to discharge, without any attempt being made to heal them. On other occasions, the Moxa was used by the medium of the needle; and consequently, in these instances, no eschars were produced. The employment of the hot bath was conjoined with the Moxa, and repeated every second day. A *douche* of cold water was applied, each time the patient was in the bath, to the head and along the spine; gentle laxatives, with the com-

pound infusion of gentian, were used to regulate the bowels, and improve the tone of the stomach.

After the second week of this treatment, which was continued until the 20th of October, no fit occurred, nor has any taken place up to this day, November 20. The bodily strength, and mental energy of this gentleman, is much increased, and he now enjoys uninterrupted health. Several of the ulcers, produced by the Moxa, are still discharging, and I intend to allow them to remain open so long as they will do so spontaneously.

CASE XXIX.

Infirmary for Rheumatic and Cutaneous Diseases, Moore-st.
August 2, 1826.

Richard Murphy, aged 48, residing 54, Bride-street, by trade a carpenter; a tall, healthy looking man, with a fair sanguineous complexion,

Labours under a spasmodic disease of the right superior extremity, characterized by the following symptoms. It occurs in paroxysms: the fit commences in the hand, which, having been for a short time convulsively moved or jerked about, soon becomes fixed in a state of permanent flexion: the flexion being either direct, or with a degree of lateral inclination. The convulsive motions, quickly extending up the limb, are soon followed by a rigid flexion of the fore-arm; and the spasms then advancing higher, rapidly arrive at his neck, drag his face towards his shoulder, cause a lateral inclination of his head, and pulling his mouth open, are followed by either a sense of constriction, or of a ball in his throat. These symptoms are preceded by a feeling of sickness and weakness, and followed by an inclination to sleep.

The first attack of this disease occurred two years ago, the second in the February following, the third in March, the fourth in May, the fifth in June, the sixth in November, and the seventh in the beginning of last June. Until the last, none of the attacks continued longer, at the utmost, than two days. On the occasion of each attack, he generally had from two to four paroxysms: each paroxysm lasting about ten minutes, and recurring after an interval of a few hours. On the occasion of the first attack, the spasmodic motions did not extend beyond his hand; but, in each of the succeeding attacks, they gradually ascended higher and higher. Since June last, he has not been one day without a paroxysm; and in the course of the last twenty-four hours, he has had not less than five. During the last paroxysm, which occurred this morning, the convulsive affection extended slightly to the entire of his right side; and he does not remember any thing which occurred after it had ascended to his head. He says "he slept it off," and his son, who accompanies him, and who appears to be an intelligent boy, says "he frothed at his mouth, and worked in his belly during the fit, like a pair of bellows." The patient reports, that he can stop the paroxysms, if he be able to get any one to grasp his hand, the moment he feels the attack, and hold the limb so firmly as to prevent its motion. This however, he says, requires great force, and he adds, that his boy was once hurt in the attempt.

He cannot attribute this disease, in its original occurrence, to any cause; but he is certain that, up to last June, he could observe that every attack was preceded by exposure to cold or wet. Since June, he has not been able to prevent the paroxysms, with all the care and attention he could give to himself. During the intervals of the paroxysms, which occurred prior to last June, his health

was perfectly good, with the exception of a weakness and constant trembling of the right hand, fore-arm, and arm. At present, he is never free from some uneasiness in his head, and his hand is so weak that he is unable to work. The entire extremity trembles exceedingly, and, particularly, when he attempts to extend it from his body.

This man remained under treatment two months, when discharged he was free from all complaints, and the strength of the limb fully restored. Eight Moxas were applied, at different periods during the treatment, along the spinous processes of the cervical vertebræ, and along the junction of the occiput with the neck. They were preceded by cupping and purging, which I repeated three times a-week, until all uneasiness of the head, and all tremulous motion of the extremity, in the intervals of the paroxysms, had subsided. The hot bath and the *douche* of cold water to the head and spine were employed, every second day, during the entire of the treatment. The paroxysms became less and less frequent, and more and more limited to the hand and fore-arm, and then ceased.

November 28—I have seen him this day; he has not had any paroxysm for seven weeks. He has not been under any treatment for the last five weeks, if the discharge after the separation of the eschars be excepted, and this is allowed still to continue.

CASE XXX.

Summer-hill, July 7, 1826.

This evening, at nine o'clock, I was called to see the son of B. C. Esq. aged fourteen years. On entering the bed-room in which the boy was, I found him apparently in a kind of restless sleep. He lay on his left side with his lower limbs drawn up, and frequently moved his arms as if not quite comfortable. His face was slightly flushed,

his eyes were shut or nearly shut, and any attempt at opening them was resisted by him with force, although he did not appear to be at all conscious of what I was doing : his resistance was purely automatic. His eyes, on examination, looked bright ; the conjunctivæ were slightly injected ; the pupils, particularly the right one, were very much dilated. I could not ascertain, satisfactorily, the state of the pulse at the wrist. It was very frequent, very irregular, without any distinct intermission, and might be said to flutter under the finger. His heart beat with violence, the systole and diastole were both distinctly to be felt, but, as it were, conjoined—so closely did the one succeed the other. The heart acted 120 times in a minute. He had discharged his urine and fæces in the bed, and the bolster was stained with a fluid, which had come from his mouth. The skin was moist, his hair appeared damp, and both trunk and extremities felt warm.

From an intelligent female servant, I acquired a knowledge of the following additional particulars :—That the attack had commenced about seven o'clock this evening, having been preceded by some heaviness or disposition to sleep ; that his neck and upper extremities were affected with convulsion, but that the convulsive movements were twitchings, rather than violent spasms, and that they would for a time cease and again recur ; that there was some foaming at the mouth ; that the general surface was hot, the face flushed, and that the whole skin had been covered with a copious moisture ; that, for a time, the left leg had been cold, but the right warm ; that, occasionally, he appeared to be sensible of his state, and that his eyes seemed to follow any one who spoke to him, yet he did not speak ; that during the convulsive movements, his heart had beat with great force ; that he had been as well as usual during the day, and that he had not

complained of any uneasiness prior to the paroxysm ; that the convulsive movements had gradually subsided, and were followed by the state in which I saw him.

I ordered some powders of calomel and scammony, and directed that they should be given, as soon as he appeared able to swallow, and that they should be repeated, at intervals, until copious evacuations were produced.

On the following morning, I found that the symptoms of the preceding night had all subsided. I was informed that, in the course of the night, he had vomited his dinner unchanged, which had been of roast beef ; that the powders had caused only one watery stool ; that, on awakening in the morning, he was somewhat delirious and violent, and that he did not appear, for some time, to know those who were about him. He was however, when I saw him, perfectly quiet, but rather fatuitous in his mode of expression. He complained of pain in the region of the stomach, and in the head ; he had thirst, his abdomen felt tumid, but his tongue was not foul : pulse 84, and very feeble.

I was now surprised to hear, for the first time, that he had been paralytic of his lower limbs for six months, and that he had been already under the care of two other practitioners. On examining the limbs they appeared full, well nourished, red and firm ; and I could not discover the least unnatural projection or deviation in the direction of the spine. Having got him out of bed, he could not stand without support ; and when he attempted to walk, he was unable to do so even with the assistance of a hand, and complained that the attempt produced great pain in the hamstrings. I was also informed that the fit, in which I saw him, was the fourth which he had had ; and that each had been followed by a state of fatuity, which lasted for some days. A convulsive paroxysm preceded

the first symptoms of paralysis, and it was only very gradually that it had arrived at its present degree.

The abdominal discharges being much out of order, a system of purgation was pursued for about a fortnight. At this time the evacuations had acquired a more natural appearance, but no improvement had taken place in the state of paralysis. On the 30th of July, he had a convulsive fit, which was, as far as I could ascertain, exactly like the one above described. The Moxa, which had been before objected to, was no longer delayed. It was applied once a-week on each side of the spinous processes of some portion of the spine; and, in the interval of each application, about three ounces of blood were taken away from the region of the back or loins by cupping. The hot bath was daily used, with the aspersion of cold water on the head and along the vertebræ. The bowels were regulated, and mild antimonial remedies were administered to act on the skin.

The success, which attended this treatment, was remarkable; before six weeks had expired, this young gentleman who had been for half a-year before I saw him confined to his bed or sofa, or at best to creeping about the room on his knees, was restored to the fullest use of his limbs. No convulsive paroxysm occurred after the application of the first Moxa, nor was there the slightest interruption in any respect to his progressive improvement. I think it necessary to mention, that he had been attended before I saw him by two of the first practitioners in town: by each for a period of two months. It is, therefore, unnecessary to say, that all ordinary measures had been tried, before the Moxa was applied.

EXPLANATION OF THE PLATE.

- FIG. 1. The Porte-aiguille:—*a*. The handle made of silver, is hollow, and holds a stock of needles of different sizes.—*b*. The Porte-aiguille, made of steel. *c*. A needle grasped by the Porte-aiguille, and made firm in its situation by the slide *d*. If it be necessary to use a needle of considerable length, a portion of it is made to pass into the handle *a*, through a hole in that end of it which corresponds to the Porte-aiguille; and when we wish to disengage the Porte-aiguille from the needle, this is easily done by pulling the slide *d* towards the smaller end of the instrument. The entire is about five inches in length. See pp. 71-2. This instrument may be had at Mr. Kennan's Artist's Warehouse, Fishamble-street.
- FIG. 2. The instrument for the application of evaporating lotions.—*a*. The pillar of such a height, as will enable the branches *b. b. b.* to clear the surface of the bed, in which the patient lies. The branches, by means of a telescope joint, may be made longer or shorter, according to the situation of the part to which the lotion is to be applied. *c*. A lamp which is used, when it is necessary that the fluid should be of a higher temperature than that of the atmosphere. *d*. A case made of tin, sufficiently large to contain a wine bottle, and, at the same time, allow the interposition of a small stratum of water. The bottle is raised from the bottom of the tin vessel by small supports; and its neck is grasped by the upper branch of the pillar. A number of skeins of cotton, immersed in the bottle, and afterwards made to hang over the part, to which the fluid is to be conveyed, serves to conduct the lotion to the part in drops; and by increasing or diminishing the number of the skeins, we may increase or diminish the number of drops.—See pp. 55, 60. Instruments of this kind may be had at Mr. Daniel's tin factory, Mary-street.
- FIG. 3. The Moxa-Forceps, with a Moxa surrounded by a bit of flat silver wire. See p. 68.
- FIG. 4. A scarificator, of the form used by Baron Larrey.—Instruments of this shape may be had at Mr. Thompson's, Surgical Instrument Maker, Dame-street.
- FIG. 5. A blow pipe.
- FIG. 6. A glass tube.

FINIS.

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TO
BARON D. J. LARREY,

SURGEON-IN-CHIEF TO THE HOSPITAL OF THE ROYAL GUARD;
INSPECTOR-GENERAL IN THE SERVICE OF MILITARY HEALTH;
FIRST SURGEON OF THE GRAND ARMY IN RUSSIA, SAXONY, AND
FRANCE, DURING THE YEARS 1812, 1813, 1814;
HONORARY MEMBER OF THE BOARD OF HEALTH FOR THE ARMY;
COMMANDER OF THE ROYAL ORDER OF THE LEGION OF HONOR;
CHEVALIER OF THE IMPERIAL ORDER OF THE CROWN OF IRON;
MEMBER OF THE INSTITUTE OF EGYPT, OF THE ROYAL
ACADEMY OF MEDICINE,
&c. &c.

To whose writings the Moxa is indebted for its present
rank on the Continent of Europe, the following pages
are inscribed by

THE AUTHOR.

Gardiner's Place, Mountjoy-square.

ERRATA.—In page 140, line 18, for *hæmorhage* read *hæmorrhage*.

Page 143, line 6, for *is* read *are*.

Folios of pages 101, 102, 103 and 104, have been repeated by mistake of the printer.

